

May 2024

Barriers to the implementation of aquatic animal health standards

Findings from a survey of WOAAH Members and recommendations.



World Organisation
for Animal Health
Founded in 1924

WOAH Data Integration Department

woah.org

observatory@woah.org

Barriers to the implementation of aquatic animal health standards: Findings from a Member survey and recommendations from WOAHA

Published by

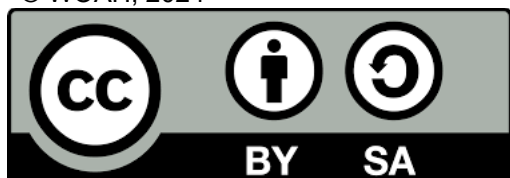
The World Organisation for Animal Health

Required citation: World Organisation for Animal Health (2024). – *Barriers to the implementation of aquatic animal health standards: findings from a Member survey and recommendations from WOAAH*. Paris, 29 pp., <https://doi.org/10.20506/woah.3476> Licence: CC BY-SA 3.0 IGO.

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on behalf of the World Organisation for Animal Health (WOAH) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by WOAAH in preference to others of a similar nature that are not mentioned.

The responsibility for the interpretation and use of the material lies with the reader, and in no event shall WOAAH be liable for damages arising from such interpretation or use. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of WOAAH.

© WOAAH, 2024



Some rights reserved. This work is made available under the Creative Commons Attribution-ShareAlike 3.0 IGO licence (CC BY-SA 3.0 IGO; <https://creativecommons.org/licenses/by-sa/3.0/igo/legalcode>). Under the terms of this licence, this work may be copied, redistributed and adapted, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that WOAAH endorses any specific organisation, product or service. The use of the WOAAH logo is not permitted. If the work is adapted, then it must be licensed under the same or equivalent Creative Commons licence. If a translation of this work is created, it must include the following disclaimer along with the required citation: ‘This translation was not created by the World Organisation for Animal Health (WOAH). WOAAH is not responsible for the content or accuracy of this translation. The original English edition shall be the authoritative edition.’

Disputes arising under the licence that cannot be settled amicably will be resolved by mediation and arbitration as described in Article 8 of the licence except as otherwise provided herein. The applicable mediation rules will be the mediation rules of the World Intellectual Property Organization (<http://www.wipo.int/amc/en/mediation/rules>) and any arbitration will be in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). Third-party materials. Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

Sales, rights and licensing. WOAAH information products are available on the WOAAH website (www.woah.org) and can be purchased through www.woah.org/en/ebookshop/.

Contents

TABLE OF AQUATIC ANIMAL DISEASES – ACRONYMS AND SHORT NAMES USED FOR THE SURVEY (BASED ON THE <i>AQUATIC CODE</i> 2021)	6
INTRODUCTION AND CONTEXT	7
1. THE SURVEY	7
1.1. BRIEF DESCRIPTION OF THE METHODOLOGY	7
1.2. CONFIDENTIALITY	8
1.3. LIMITATIONS OF THE DATA.....	8
1.4. PROFILE OF RESPONDING WOAHS MEMBERS.....	9
2. WOAHS STANDARDS RELATED TO AQUATIC ANIMAL DISEASE SURVEILLANCE AND NOTIFICATION	10
2.1. WOAHS-LISTED DISEASES FOR AQUATIC ANIMALS NOTIFIABLE AT THE NATIONAL LEVEL	10
2.2. DISEASE-SPECIFIC STANDARDS TO DETERMINE DISEASE STATUS.....	11
2.3. AQUATIC ANIMAL DISEASE SURVEILLANCE	12
2.4. BARRIERS TO THE SURVEILLANCE OF AQUATIC ANIMAL DISEASES	12
2.5. ACCESS TO LABORATORY DIAGNOSTIC CAPACITY	13
2.6. TIMELINESS AND COMPLETENESS OF DISEASE NOTIFICATION TO WOAHS.....	14
3. WOAHS STANDARDS RELATED TO TRADE AND BIOSECURITY	15
3.1. NATIONAL LEGISLATION	15
3.2. IMPLEMENTATION OF STANDARDS RELEVANT TO TRADE	16
3.3. IMPLEMENTATION OF BIOSECURITY IN AQUACULTURE ESTABLISHMENTS	17
3.4. BARRIERS TO THE IMPLEMENTATION OF WOAHS STANDARDS	18
4. CAPACITY BUILDING	18
4.1. ENGAGEMENT WITH THE PVS PATHWAY FOR AQUATIC ANIMAL HEALTH SERVICES ...	18
4.2. MAIN BARRIERS TO REQUESTING A PVS AQUATIC EVALUATION	19
4.3. EDUCATION AND TRAINING	20
5. POTENTIAL FACTORS INFLUENCING THE PRESENCE OF BARRIERS	23
5.1. METHODOLOGY	23
5.2. MAIN FINDINGS.....	23
CONCLUSION	26
ANNEX 1: TABLE OF COMPILED RECOMMENDATIONS	27

Table of aquatic animal diseases – acronyms and short names used for the survey (based on the [Aquatic Code 2021](#))

Acronym/Short name	Disease
Listed amphibian diseases	
<i>B. dendrobatidis</i>	Infection with <i>Batrachochytrium dendrobatidis</i>
<i>B. salamandrivorans</i>	Infection with <i>Batrachochytrium salamandrivorans</i>
<i>Ranavirus spp.</i>	Infection with <i>Ranavirus</i> species
Listed crustacean diseases	
AHPND	Acute hepatopancreatic necrosis disease
Crayfish plague	Infection with <i>Aphanomyces astaci</i>
NHP	Infection with <i>Hepatobacter penaei</i> (necrotising hepatopacreatitis)
IHHNV	Infection with infectious hypodermal and haematopoietic necrosis virus
IMV	Infection with infectious myonecrosis virus
White tail disease	Infection with <i>Macrobrachium rosenbergii</i> nodavirus
TSV	Infection with Taura syndrome virus
WSSV	Infection with white spot syndrome virus
YHV	Infection with yellow head virus genotype 1
Listed fish diseases	
EUS	Infection with <i>Aphanomyces invadans</i> (epizootic ulcerative syndrome)
EHNV	Infection with epizootic haematopoietic necrosis virus
GS	Infection with <i>Gyrodactylus salaris</i>
ISAV	Infection with HPR-deleted or HPR0 infectious salmon anaemia virus
SAV	Infection with salmonid alphavirus
IHNV	Infection with infectious haematopoietic necrosis virus
KHV	Infection with koi herpesvirus
RSIV	Infection with red sea bream iridovirus
SVCV	Infection with spring viraemia of carp virus
VHS	Infection with viral haemorrhagic septicaemia virus
Listed mollusc diseases	
AbHV	Infection with abalone herpesvirus
<i>B. exitiosa</i>	Infection with <i>Bonamia exitiosa</i>
<i>B. ostreae</i>	Infection with <i>Bonamia ostreae</i>
<i>M. refringens</i>	Infection with <i>Marteilia refringens</i>
<i>P. marinus</i>	Infection with <i>Perkinsus marinus</i>
<i>P. olseni</i>	Infection with <i>Perkinsus olseni</i>
<i>X. californiensis</i>	Infection with <i>Xenohaliotis californiensis</i>
Emerging diseases	
CEV	Infection with carp edema virus
TiLV	Infection with tilapia lake virus
EHP	Infection with <i>Enterocytozoon hepatopenaei</i>

Introduction and context

As part of its role as a standard-setting organisation, the World Organisation for Animal Health (WOAH) adopts international standards, particularly with respect to diseases that may be transmitted across international borders. For aquatic animal health, these standards are presented in the [Aquatic Animal Health Code \(the Aquatic Code\)](#) and the [Manual of Diagnostic Tests for Aquatic Animals \(the Aquatic Manual\)](#); they aim to improve aquatic animal health and welfare worldwide. The Aquatic Animal Health Standards Commission (the Aquatic Commission) is responsible for the development and revision of these standards and is supported by *ad hoc* Groups, WOAH Reference Centre experts, experts from Member Countries and the WOAH Secretariat. The implementation of these science-based standards is critical to the improvement of aquatic animal health.

In 2021, WOAH launched its first [Global Aquatic Animal Health Strategy \(the Strategy\)](#), which includes four objectives and 23 specific activities, including:

- identification of barriers to the implementation of standards (Activity 1.5)
- support for the implementation of standards (Activity 2.1)
- identification of barriers to transparency in disease reporting (Activity 2.4)
- Increased use of the Performance of Veterinary Services (PVS) Pathway (Activity 2.2)
- support for WOAH Delegates and Focal Points (Activity 2.6).

The implementation of WOAH standards varies across Regions and Members¹. Identifying the barriers to implementation is an important objective both for this Strategy and for the WOAH Observatory. However, the data routinely collected by WOAH and other partners were considered insufficient to reach this goal. Consultation with Members was therefore essential to identify the barriers preventing transparent reporting of aquatic animal diseases and full implementation of the standards outlined in the *Aquatic Code* and *Manual*.

1. The survey

1.1. Brief description of the methodology

This report provides a summary of results derived from a survey of national Focal Points for Aquatic Animals². The survey included 48 questions covering five main areas:

- disease surveillance and national reporting;
- disease notification to WOAH;
- implementation of recently adopted WOAH standards and identified barriers;
- PVS Pathway for Aquatic Animal Health Services;
- capacity building.

The English version of the questionnaire is provided as Annex 2. The questionnaire was translated into the other two official languages of WOAH (French and Spanish) and

¹ 'Members' refers to the countries and territories that are members of WOAH.

<https://www.woah.org/en/who-we-are/members/>

² Person nominated by the WOAH Delegate to provide technical assistance on aquatic animal health matters. Their Terms of Reference are available here:

<https://www.woah.org/app/uploads/2021/03/aquatic-animals.pdf>

administered using the survey tool SurveyMonkey Audience (www.surveymonkey.com/mp/audience).

The survey was developed in early 2022 and trialled by a number of groups to assess its suitability. It was initially trialled internally by WOAAH staff (from Headquarters and Regional and Sub-Regional Representations) and then by the Aquatic Commission and by a subset of Focal Points. After revision to take account of feedback from the test groups, all Focal Points for Aquatic Animals were invited to complete the survey between mid-March and the end of April 2022.

Initial findings were summarised and presented during the meetings of the five WOAAH Regional Commissions and specific kiosk events at the WOAAH General Session in May 2022.

The results of the survey have been published in two documents: a dashboard that presents the results in graphical form (available [here](#)), and this report, which summarises the main findings. WOAAH has proposed recommendations linked to the main findings; these can be found at the end of relevant paragraphs and have also been compiled in Annex 1.

1.2. Confidentiality

To encourage participation, WOAAH guaranteed the confidentiality of respondents by aggregating the answers by region or other category (e.g. countries that import/export aquatic animals). The individual responses are therefore not available outside WOAAH.

1.3. Limitations of the data

In addition to the usual limitations of surveys (survey errors, survey constraints and survey effects³), the following should be taken into account when interpreting the survey results.

Participation

Among the 182 countries and territories that were Members of WOAAH in 2022 (this number has since increased to 183), 119 completed the survey, making a participation rate of 65%. There were variations between regions, ranging from 58% in the Middle East to 75% in the Asia–Pacific (Figure 1). This participation rate is fairly high in comparison to other recent WOAAH surveys. This is likely due to the strong support received from Regional and Sub-Regional Representatives, who encouraged Members to contribute, and to the perceived relevance of the topic.

However, 35% of Members did not complete the survey, representing an important source of bias in the results. Although the reasons for non-participation are not known, it is assumed that Members with less interest in aquatic animal health would be less likely to complete the survey.

³ Survey response effects refer to the various biases and tendencies that can affect how individuals respond to survey questions, e.g. response bias.

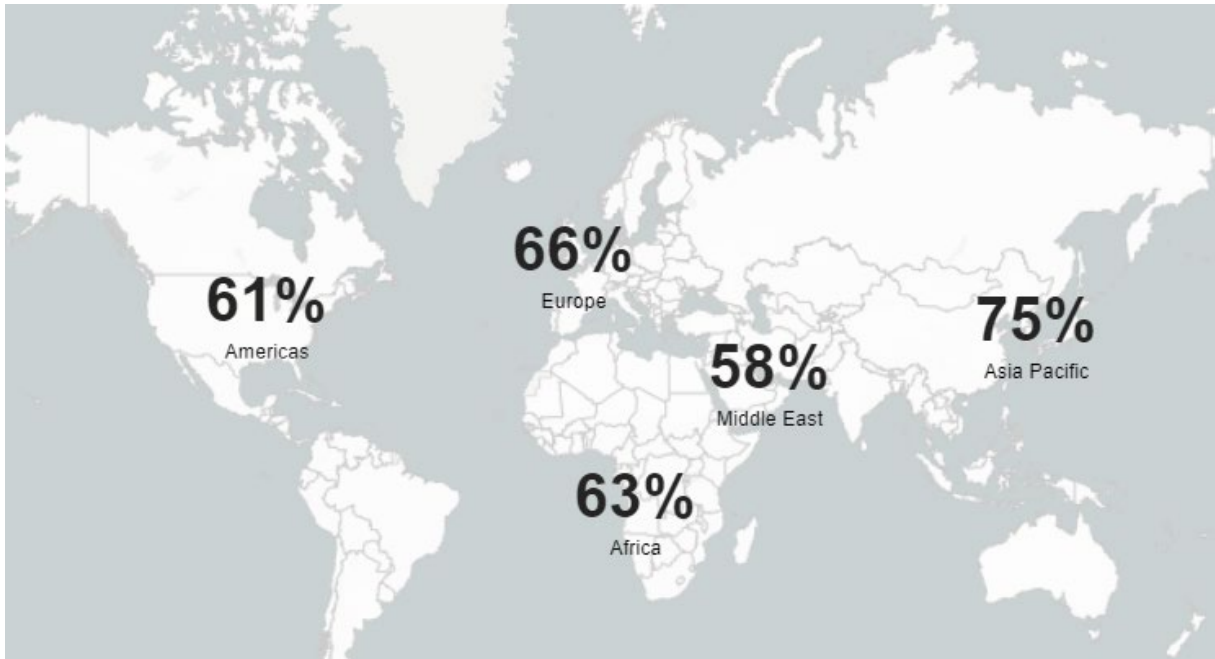


Figure 1: Regional survey participation rate

1.4. Profile of responding WOAAH Members

The vast majority of the respondents were aware of the [WOAH Aquatic Animal Health Strategy](#); only 9% were not. This might be due to the fact that 86% of the respondents were nominated WOAH national Focal Points for Aquatic Animals. However, less than half of the respondents (48%) were familiar with the content of the Strategy (Figure 2).

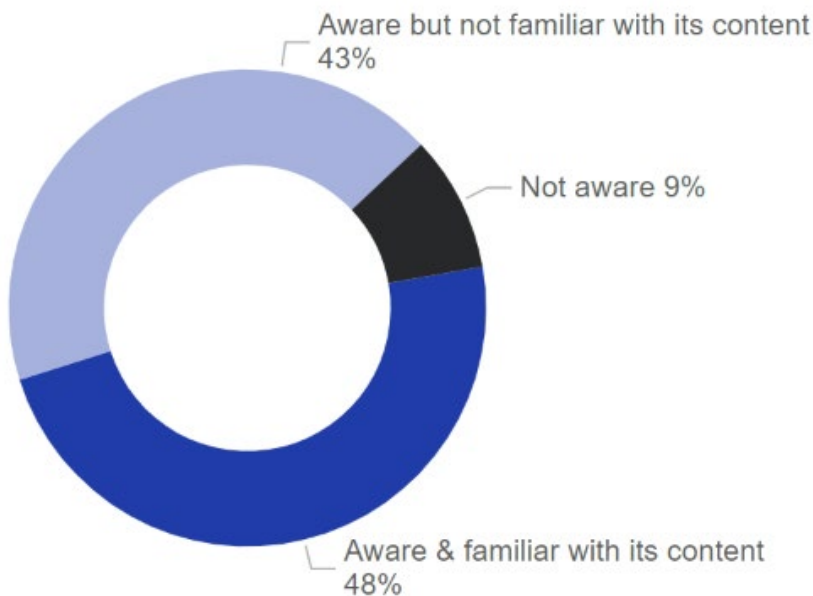


Figure 2: Familiarity of the respondents with the WOAAH Aquatic Animal Health Strategy

Most (83%) of the responding Members considered their WOAH Delegate to be part of the organisational structure of the Competent Authority for aquatic animal health and welfare. Most respondents also indicated that there are formal communication channel(s) between the WOAH Delegate, the Focal Point for Aquatic Animals and the Competent Authority for aquatic

animal health and welfare. Those channels include formal reporting chains and coordination meetings, as well as legal frameworks and consultation during the standard-setting process.

Two-thirds of respondents reported having staff dedicated to the implementation of aquatic animal health and welfare standards, with some variation between regions (from 63% each in Europe and the Asia–Pacific to 86% in the Middle East). However, this question did not assess the number of staff dedicated to this function and therefore cannot assess completely the capacity of the Aquatic Animal Health Services.

Most of the responding Members already import and/or export aquatic animals or aquatic animal products, or plan to do so in the coming years (93% and 98% respectively).

2. WOAHA standards related to aquatic animal disease surveillance and notification

WOAH Members play a key role in developing standards by contributing expertise and country experience through their comments on draft standards. The implementation of standards is a fundamental responsibility of all WOAHA Members, with ultimate responsibility lying with their Competent Authority.

2.1. WOAHA-listed diseases for aquatic animals notifiable at the national level

Survey respondents were asked to assess the relevance of WOAHA-listed aquatic animal diseases to their country/territory. Figure 3 shows that 46 responding Members (38%) said that up to five WOAHA-listed diseases were notifiable by law/regulation at the national level, while 30 of them (25%) had laws/regulations in place for between 26 and 32 diseases. For the majority of respondents, a disease was notifiable only when it was considered relevant, but certain non-relevant diseases were also notifiable in some countries (Figure 4). Diseases may be considered not relevant for many reasons; for example, there may be no susceptible species in the country, there may be no trade in susceptible species or the disease may be considered endemic.

Number of responding Members depending on the number of WOAHA diseases notifiable at national level

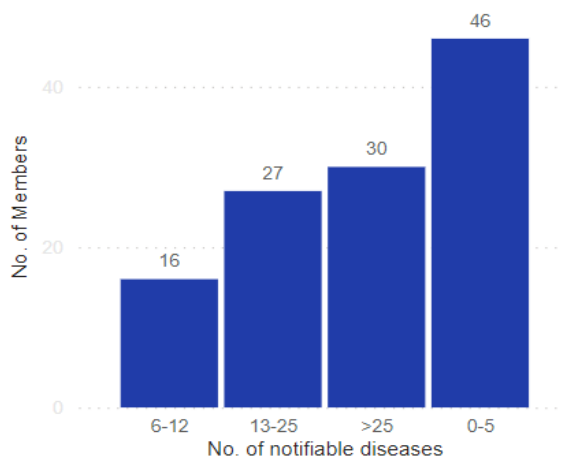


Figure 3: Number of Members ordered by the number of WOAHA-listed diseases that are notifiable at national level

The Asia–Pacific and the Americas had the highest numbers of notifiable WOAHA-listed aquatic animal diseases (respectively 47% and 46% of the responding Members from these regions said that more than 26 diseases were notifiable at national level). This may reflect the importance of aquaculture in these regions.

Recommendation 1: Members that do not have a national list of notifiable aquatic animal diseases are encouraged to develop one (also see Recommendations 12 and 15).

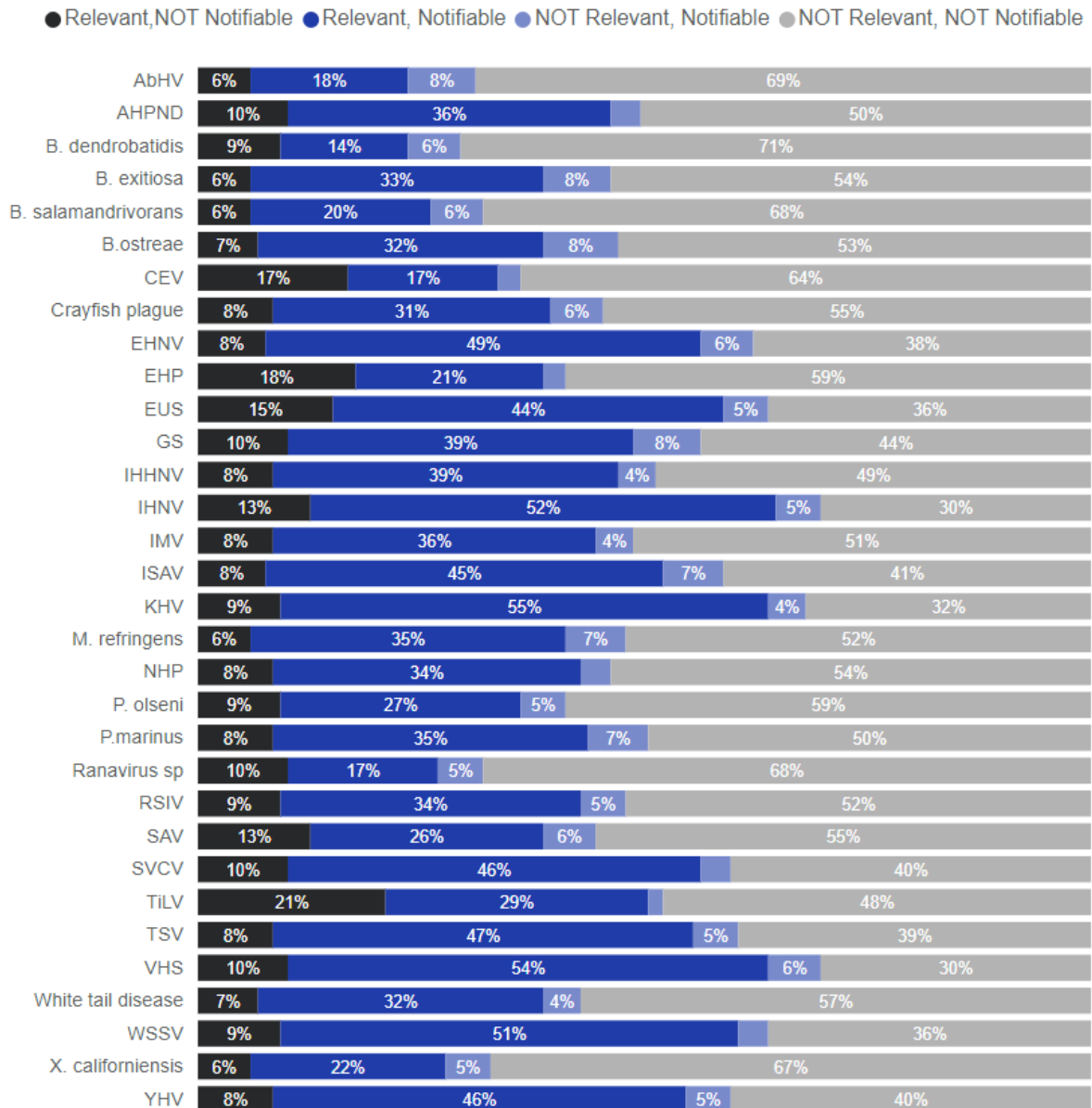


Figure 4: Percentage of Members that consider a disease to be relevant/not relevant to their country or territory and in which the disease is (or is not) notifiable at national level

2.2. Disease-specific standards to determine disease status

For each disease listed by WOA⁴, a chapter of the *Aquatic Code* provides a case definition and describes the requirements to determine the disease status of a country or territory (e.g. surveillance requirements).

Survey respondents were asked to assess their country's degree of implementation of WOA standards related to the establishment of disease status (whether the disease is present or absent). They were asked to say whether the standards were largely implemented for relevant diseases; some standards were implemented for relevant diseases; few standards were implemented or whether the standards were not implemented).

⁴ WOA List of aquatic animal diseases in [Chapter 1.3. of the Aquatic Code](#)

Implementation of WOAAH standards were reported as being highest for fish diseases, followed by crustacean diseases, mollusc diseases and then amphibian diseases. Almost half of the responding Members (46.2%) considered that they have a high degree of compliance for fish diseases against 9.2% for amphibian diseases (Figure 5).

For fish diseases, responding Members from Europe reported the highest level of compliance (65.7% reported a high degree of compliance), followed by the Middle East (57.1%). For the three other categories, the Asia–Pacific reported the highest level of compliance (62.5% for crustaceans, 37.5% for molluscs and 16.7% for amphibians), followed by the Americas for crustacean diseases (47.4%). This is followed by Europe for mollusc diseases (34.3%) and by the Americas and Europe for amphibian diseases (respectively 15.8% and 8.6%). It is worth noting that all responding Members from the Middle East indicated an absence of compliance for mollusc diseases or indicated that they were not relevant to their country.

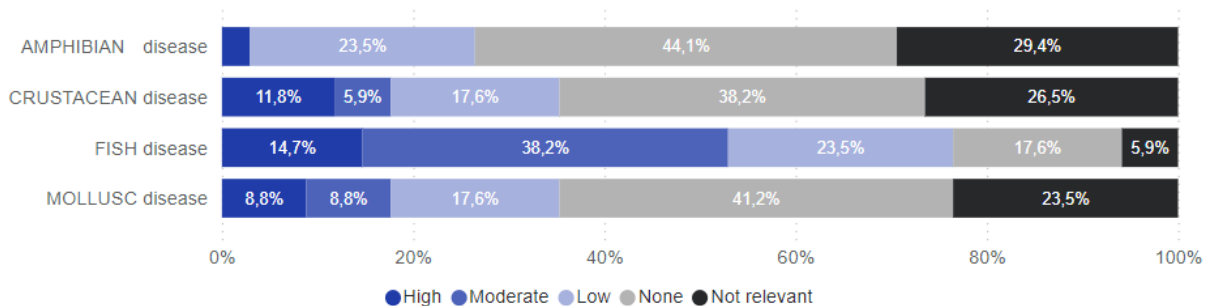


Figure 5: Implementation of the disease-specific standards of the Aquatic Code for determining disease status (percentage of Members indicating that they have a high, moderate or low level of compliance with the recommendations)

2.3. Aquatic animal disease surveillance

Members were asked if they had a surveillance system in place for aquatic animal diseases and a targeted surveillance system for each of the WOAAH-listed diseases. Seventy-nine per cent (79%) of respondents reported the existence of a passive surveillance system, while the number of respondents reporting the presence of a targeted surveillance system varied by disease. This ranged from 28% for infection with viral haemorrhagic septicaemia to just 4% for the three WOAAH-listed diseases of amphibians.

2.4. Barriers to the surveillance of aquatic animal diseases

Survey respondents were also asked to assess a list of potential barriers to the surveillance of aquatic animal diseases. They were asked to confirm whether or not they were a barrier and, if they were, to rank them as 'blocking barriers', 'barriers with high impact', 'barriers with moderate impact' or 'barriers with little impact'. Respondents also had the option to answer 'I don't know'. The analysis of this question focuses on barriers that were reported as blocking or highly impacting.

As shown in Figure 6, the lack of material and financial resources, the lack of human resources and workforce capacity, the lack of expertise in aquatic animal health, and the lack of laboratory diagnostic capacity were considered the main barriers to aquatic animal disease surveillance.

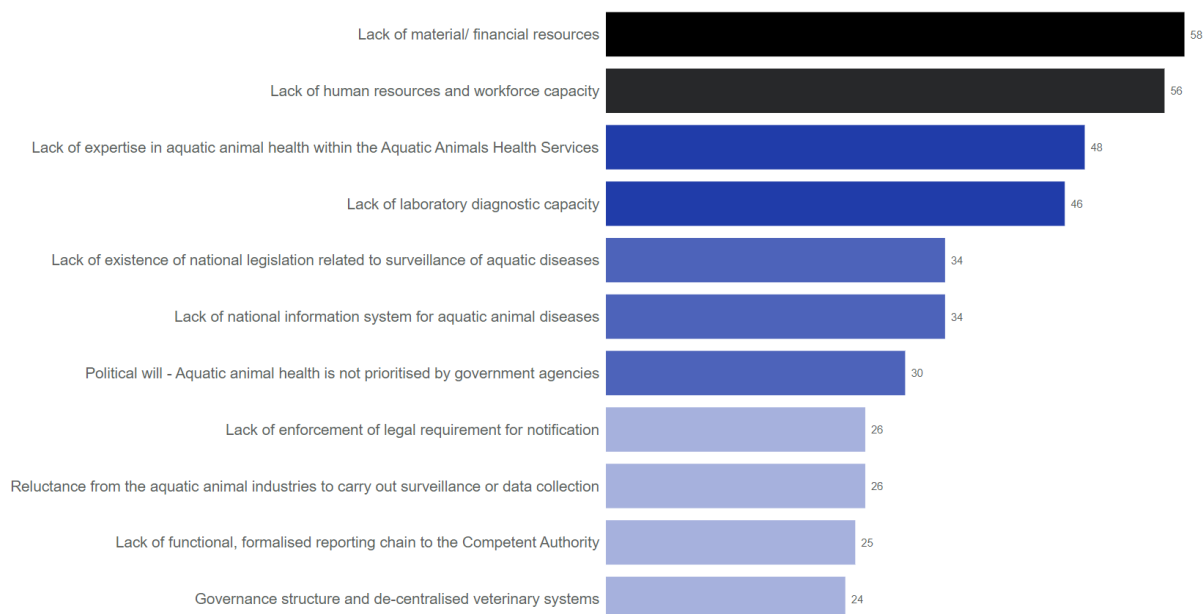


Figure 6: Main barriers to aquatic animal disease surveillance and data collection at national/central level (number of responding Members that ranked the barriers as blocking or highly impacting).

Recommendation 2: WOAHA to promote regionally coordinated surveillance programmes through the establishment of regional networks for aquatic animal health. Regional programmes will be based on proximity, trade exchanges and risk for disease introduction, spread and impact.

Recommendation 3: WOAHA to develop and propose capacity building activities to enhance national and regional expertise in aquatic animal disease surveillance and surveillance systems.

Recommendation 4: Members, particularly Members with significant aquatic animal production, are encouraged to invest more resources in improving regional and national surveillance capacity for aquatic animal diseases.

2.5. Access to laboratory diagnostic capacity

Members were asked about their access to laboratory diagnostic capacity for each WOAHA-listed disease of aquatic animals.

Fifty-six per cent of responding Members indicated having laboratory diagnostic capacity for at least one WOAHA-listed disease. Access to laboratory diagnostic capacity varied by region. Members in the Asia–Pacific, Europe and the Americas reported the highest level of laboratory diagnostic capacity, with each region having diagnostic capacity for at least one WOAHA-listed disease, which may reflect the importance of aquaculture in these regions (Figure 7).

Diagnostic capacity also varied by disease. For example, 41% of Members (the highest proportion) had diagnostic capacity for infection with koi herpesvirus, while only 12% of respondents had diagnostic capacity for infection with *B. dendrobatidis*.

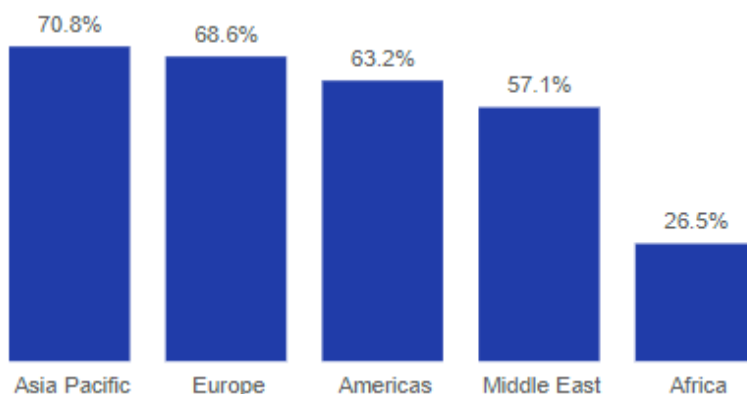


Figure 7: Percentage of Members with access to laboratory diagnostic capacity for at least one WOAHL-listed disease of aquatic animals (major variations can be seen in the dashboard depending on the disease)

As might be expected, the diseases for which a high proportion of respondents said they have access to laboratory diagnostic capacity were the diseases that a high proportion of respondents considered relevant to their country (and which were notifiable at national level). The diseases for which there was no WOAHL Reference Laboratory had a lower proportion of respondents reporting having access to laboratory diagnostic capacity.

Recommendation 5: WOAHL to support diagnostic capacity for Members through the development of network/s of aquatic animal health Reference Centres.

Recommendation 6: Members are encouraged to identify national laboratories that could be accredited as a WOAHL Reference Laboratory or could partner in Laboratory Twinning projects for aquatic animal diseases.

Recommendation 7: Members are encouraged to strengthen their national laboratory diagnostic capacity, performance and quality (also see Recommendation 15).

2.6. Timeliness and completeness of disease notification to WOAHL

Survey respondents were asked to assess their level of confidence that immediate notifications to WOAHL for aquatic listed diseases had been made in a timely and comprehensive manner. About half of the respondents were very confident that aquatic animal diseases had been reported in a timely manner over the past 5 years. This is not consistent with the submission times of the immediate notifications sent through the World Animal Health Information System (WAHIS) for aquatic listed diseases between 2017 and 2021. During this period, only 4 of the 35 countries and territories⁵ that submitted at least one immediate notification (11%) had an average submission time compliant with the requirements of the standards (within 24 hours of confirmation).

The same proportion (around 50%) were very confident that notifications had been comprehensive (mostly the same respondents). It is worth noting that 67% of the Members have submitted their semestrial report on aquatic animal diseases to WOAHL via WAHIS. WOAHL is currently undertaking an assessment of the completeness of reporting on aquatic animal diseases; this will provide additional data to better assess the responses to this question.

Disparities were observed between regions and depending on the contribution of the export of

⁵ Corresponding to all countries and territories reporting to WOAHL, without limitations to those that completed the survey.

aquatic animal products to the GDP. For timeliness and comprehensiveness, more respondents from the Americas and Europe chose 'very confident' compared to respondents from other regions. In addition, higher rates of respondents chose 'very confident' in the countries where aquatic animal product exports contribute to 0.1% or more of the GDP.

While the lack of human resources and workforce capacity was identified as the main barrier to submitting timely and complete notifications, the impact of notification on trade and the lack of priority given by government agencies to aquatic animal health also scored high, as did the lack of knowledge on notification obligations or WOAAH notification procedures (Figure 8).

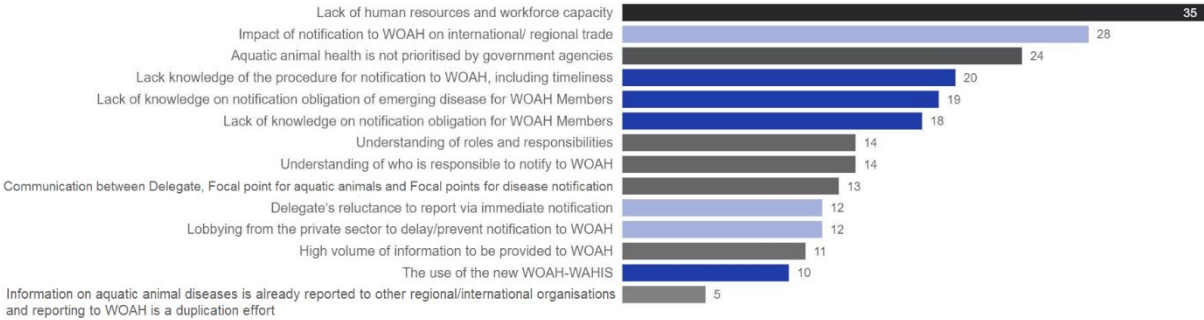


Figure 8: Main barriers to aquatic animal disease notification to WOAAH (number of responding Members that ranked the barriers as blocking or highly impacting)

Recommendation 8: WOAAH Regional and Sub-Regional Representations to continue to encourage and support their Members to notify aquatic animal diseases to WOAAH in a more timely and comprehensive way.

Recommendation 9: WOAAH to develop resources to assist Member Countries and Territories in notifying WOAAH of cases of aquatic animal diseases. These should include (i) specific training materials on disease notification, including an e-learning module (ii) a training tool kit for Focal Points, and iii) an advocacy paper on the benefits of transparent notification for decision-makers.

Recommendation 10: WOAAH to coordinate the implementation of activities to improve knowledge of disease reporting procedures and obligations among national Focal Points for Aquatic Animals (and national Focal Points for Notification, as relevant).

3. WOAAH standards related to trade and biosecurity

3.1. National legislation

Quality legislation is fundamental to the effective control of aquatic animal diseases, as it allows Aquatic Animal Health Services to act quickly and decisively through the power of clearly written and enforceable legislation.

Figure 9 represents the number of responding Members who reported having legislation on important topics (listed on the left). It also shows the extent to which the legislation complies with WOAAH standards (exceeds them, is equivalent to them, or falls below them). The majority of respondents that reported the existence of national legislation indicated that it was

equivalent to WOAHA standards, while a small percentage of Members indicated that their national legislation exceeded WOAHA standards.

National regulations for trade measures, importation/exportation procedures and health certification were reported to exist by the largest proportion of respondents (89%), while approximately one-quarter of respondents reported the following areas of national regulations as non-existent: regulation of aquatic animal health professionals and veterinarians, the quality of Aquatic Animal Health Services, and the welfare of farmed fish.

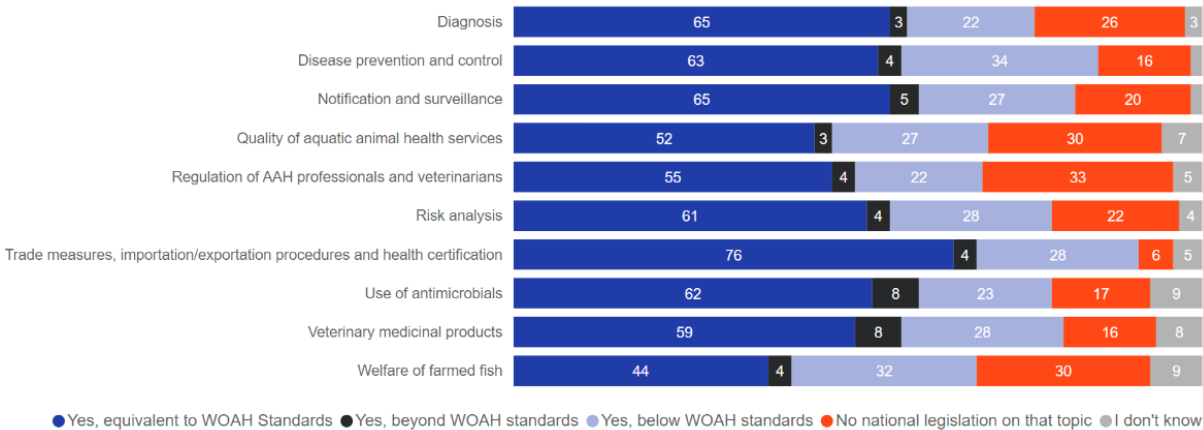


Figure 9: Number of Members who reported the existence of national legislation on important aquatic topics (Members also indicated whether the legislation fell below WOAHA standards, was equivalent to them, or went beyond them)

Seventy-two per cent of respondents indicated that their country/territory has national regulations that list nationally notifiable aquatic animal diseases. This indicates that around 30% of Members do not have these regulations in place.

Recommendation 12: Members are encouraged to strengthen national aquatic animal health legislation in order to support the implementation of WOAHA Standards (also see Recommendations 14 and 15).

3.2. Implementation of standards relevant to trade

As mentioned above, for each disease listed by WOAHA, a chapter of the *Aquatic Code* describes recommendations for safe trade.

Survey respondents were asked to rate their country’s implementation of key responsibilities and core functions identified in the *Aquatic Code* concerning trade measures. Two-thirds of the responding Members indicated that their national regulations for trade in aquatic animals and/or aquatic animal products are equivalent to WOAHA international standards (Figure 10). Very few (3%) considered their national legislation to be above WOAHA standards, while 30% indicated that national regulations were below WOAHA requirements (including no national legislation).

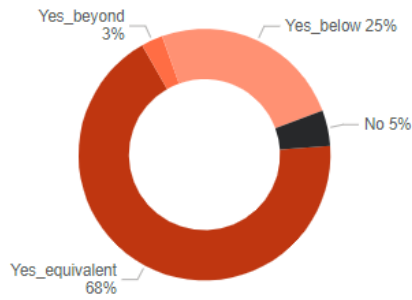


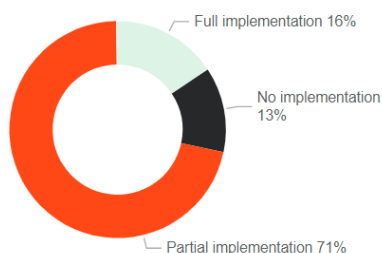
Figure 10: Percentage of Members that reported the existence of national trade regulations (Members also indicated whether the legislation fell below WOAH standards, was equivalent to them, or went beyond them)

3.3. Implementation of biosecurity in aquaculture establishments

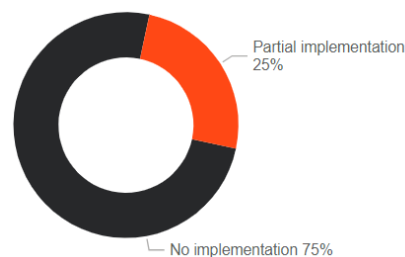
The chapter on ‘Biosecurity in aquaculture establishments’ (Chapter 4.1) of the *Aquatic Code* was adopted by the World Assembly of Delegates in May 2021. Biosecurity is a critical component of reducing the probability of pathogen introduction to, or transmission within, a region or growing unit(s), as outlined in the *Aquatic Code* chapter. Assessing the extent to which the requirements in this chapter are being implemented, almost a year after their adoption, was considered important.

Only 9% of the responding Members reported having entirely implemented the chapter’s requirements at the time the survey was conducted, that is, 11 months after the adoption of the chapter.

The level of implementation was higher (87% for full or partial implementation) among responding Members who indicated that their national regulations for disease prevention and control are equivalent to WOAH standards (Figure 11). In comparison, among the respondents that had indicated that their country had no national regulations for disease prevention and control, only a quarter indicated that the requirements of Chapter 4.1. were partially implemented (none for full implementation).



Levels of implementation in countries whose national regulations for trade in aquatic animals and aquatic animal products are equivalent to WOAH standards



Levels of implementation in countries with no national regulations for trade in aquatic animals and aquatic animal products

Figure 11: Level of implementation of the requirements of Chapter 4.1. ‘Biosecurity in aquaculture establishments’, almost a year after its adoption by the WOAH Assembly of Delegates (the diagram shows the percentage of Members who implement the requirements fully, partially, or not at all)

3.4. Barriers to the implementation of WOH standards

Respondents were also asked to rate the impact of a list of pre-identified barriers to the implementation of standards. Access to training, diagnostic capacity, resources and expertise were considered to be the most significant barriers (Figure 12).

Recommendation 13: WOH to continue to support the scientifically sound development of new standards and the revision of existing standards, in consultation with Members, in order to meet the needs of Members and reduce the barriers to the standards' implementation. This will be achieved through the implementation of Activities 1.1 – 1.5 of the Strategy.

Recommendation 14: WOH to develop additional guidance, including an e-learning module, to assist Members in understanding and using standards.



Figure 12: Main barriers to standards implementation (number of responding Members that ranked the barriers as blocking or highly impacting)

4. Capacity building

4.1. Engagement with the PVS Pathway for Aquatic Animal Health Services

A PVS Evaluation using the PVS Tool – Aquatic is undertaken at the request of a Member as part of the PVS Pathway. The evaluation is designed to identify gaps and weaknesses in the ability of Aquatic Animal Health Services to comply with WOH international standards. In addition, it aims to share a common vision with stakeholders, establish priorities for improvements, and equip Members to carry out strategic initiatives. An external expert perspective can reveal gaps, inefficiencies and opportunities for innovation.

The PVS Tool – Aquatic is in line with WOH standards related to the performance of Aquatic Animal Health Services, compiled in [Section 3 of the Aquatic Code](#).

Nine Members out of the 119 that completed the survey indicated that they had undertaken a PVS Aquatic Evaluation. WOH had conducted 13 PVS Aquatic Evaluation missions in total at the time of the survey (this number includes four missions carried out in countries/territories that did not respond to the survey). All the respondents that had undertaken a PVS Aquatic Evaluation considered that the Tool was well adapted to their country and to the assessment of their Aquatic Animal Health Services. Respondents also considered that the mission had met the country's expectations (six fully met and three partially met).

Three respondents offered suggestions to improve the PVS Tool and the way missions were prepared and conducted, these included:

- all relevant actors of the value chain should be included for an optimal adoption of the results;
- activities aimed at preventing, controlling and/or eradicating diseases, as well as demonstrating their absence, could be addressed in more detail in Fundamental Component II 'Authority and Technical Capacity';
- WOHAI could further support Members in adopting the recommendations arising from PVS reports.

Most of the Members who had not undertaken a PVS Aquatic Evaluation knew about the existence of the Tool; however, 19 had not known about it before the questionnaire was conducted (Figure 13). Interestingly, 60% said that information on the existence of the PVS Tool – Aquatic had not been distributed to the relevant stakeholders in their country/territory (Figure 14).

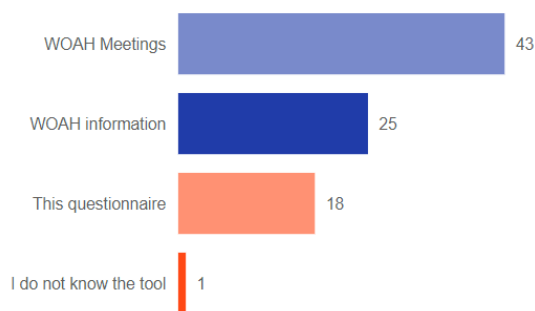


Figure 13: Distribution of the answers to the question 'How did you come to know of the WOHAI PVS Tool – Aquatic?'

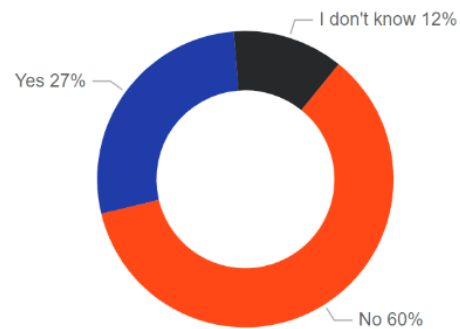


Figure 14: Distribution of the answers to the question 'Has the knowledge of the WOHAI PVS Tool – Aquatic been distributed to relevant stakeholders in your country?'

This survey also provided an opportunity to gauge Members' interest in the PVS Aquatic Programme. Fifty-four Members (59% of the 95 respondents to this question) expressed an interest in requesting a PVS Aquatic Evaluation mission in the next 5 years (Figure 15), with large regional variation (from 20% of respondents in Europe to 85% of respondents in the Asia-Pacific).

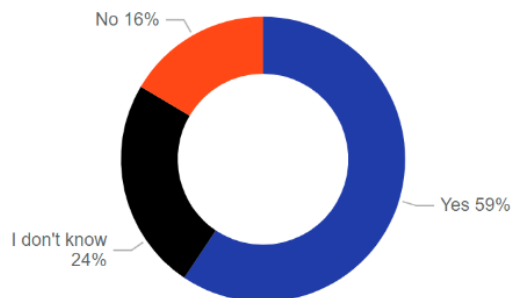


Figure 15: Distribution of the answers to the question 'Would your country/territory be interested in conducting a PVS Aquatic mission in the next 5 years?'

4.2. Main barriers to requesting a PVS Aquatic Evaluation

Of the nine pre-identified barriers to requesting a PVS Aquatic Evaluation, the most common barrier reported was the unavailability of funds to cover the costs of the mission (no financial support from the government or external donors). Forty-six Members considered it to be a 'blocking' or 'highly impacting' barrier (Figure 16). The second most impactful barrier reported was the lack of knowledge about the benefits of conducting this activity. The third-ranking barrier was the burden that preparing and receiving a PVS Evaluation places on local staff.

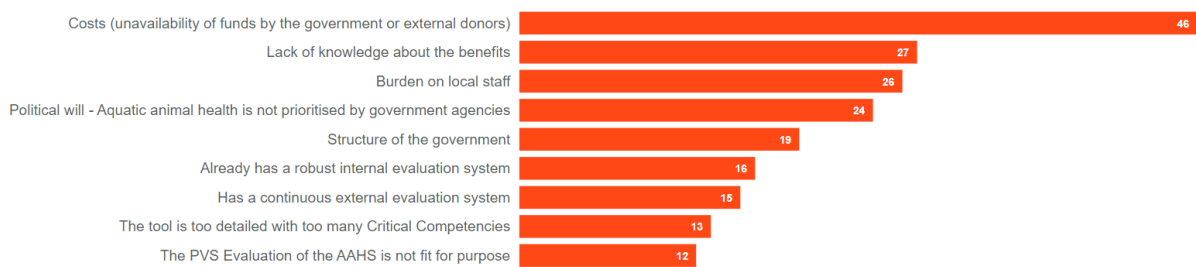


Figure 16: Main barriers to requesting a PVS Evaluation of Aquatic Animal Health Services (number of responding Members that ranked the barrier as blocking or highly impacting) [AAHS: Aquatic Animal Health Services]

Finally, 78% of the responding Members considered that WOAHS offers a sufficient range of tools and activities to support the strengthening of Aquatic Animal Health Services. Several suggestions were received to further improve WOAHS support. Those proposals are being explored and prioritised by the WOAHS Capacity Building Department, in line with the Strategy implementation plan.

Recommendation 15: WOAHS will continue to promote and advocate for the use of PVS Evaluations of Aquatic Animal Health Services as the first step in engaging with the PVS Pathway. It will also promote the use of PVS Targeted Support activities, such as the Veterinary Legislation Support Programme (to support Recommendation 12) and the Sustainable Laboratories Programme (to support Recommendation 7). Opportunities for Focal Point trainings and WOAHS regional networks for aquatic animal health will be identified and activities developed, as well as any PVS Pathway activities. This should also include a resource mobilisation strategy to address the financial barriers.

4.3. Education and training

Members were asked to assess the quality of both initial and continuing education of their Aquatic Animal Health Services personnel, as a lack of effective education and training can limit the capacity of these services to implement WOAHS standards. As shown in Figure 17, more than 75% of the responding Members indicated that both initial and continuing education of their Aquatic Animal Health Services personnel is inadequate. This figure includes those who said that there was no training at all, those who said training was insufficient, and those who described the training provision as average and in need of improvement. (The association between low-capacity Aquatic Animal Health Services and poor implementation of WOAHS standards for aquatic animals is explored in Section 5 of this report.)

A lack of initial education on aquatic animal health and welfare, both for veterinarians and aquatic animal health professionals, was widely considered to be a barrier to the implementation of WOAHS standards, with close to 50% of respondents describing it as a blocking or highly impacting barrier. Budget allocation was considered the main barrier to continuing education on aquatic animal health (Figure 18). Respondents noted that, training, when provided, often lacks learning needs assessments and impact assessments. The training offer and limited access to training were also identified as important barriers.

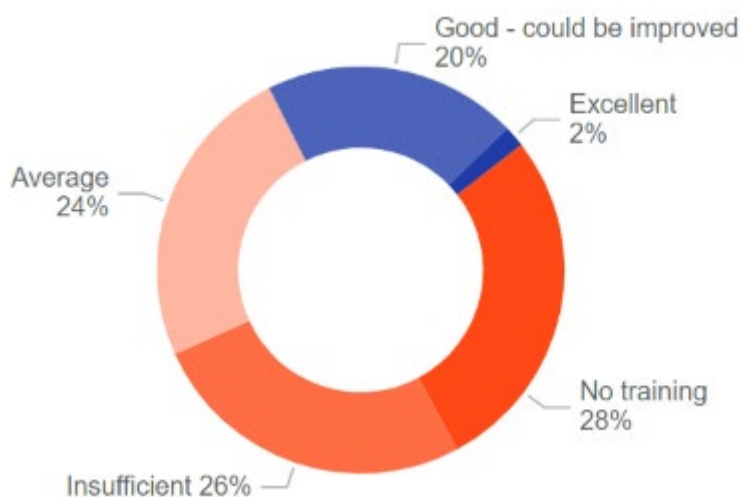


Figure 17: Respondents' perceptions of the quality of education (initial and continuing) for Aquatic Animal Health Services

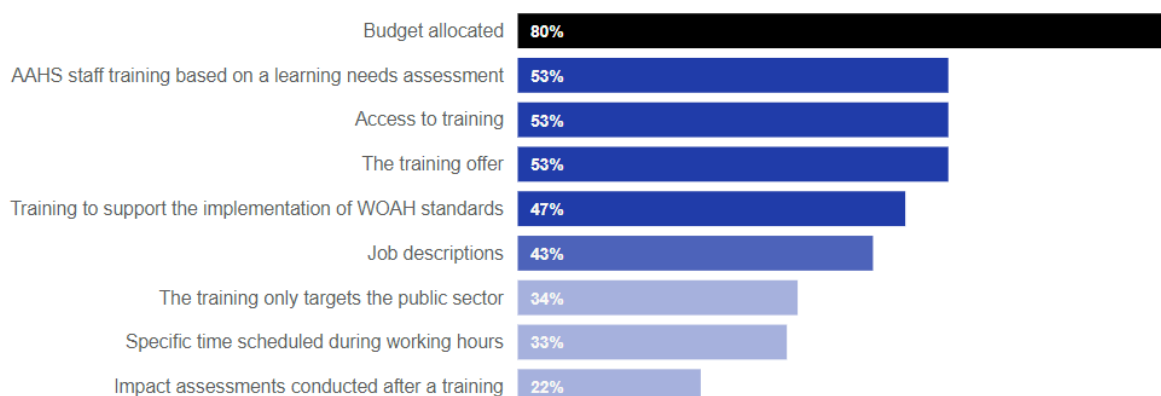


Figure 18: Main barriers to continuing education on aquatic animal health and welfare (percentage of Members that ranked the barrier as blocking or highly impacting)

Figure 19 shows that 45 responding Members (38%) have no access to training materials for continuing education in aquatic animal health. For Members with access to an aquatic animal health training programme, the main education providers were the national Aquatic Animal Health Services (39 Members – 33%) and international and regional organisations (31 Members – 26%), with FAO cited as the most common provider. Only two Members, both in Europe, had access to training provided by private business operators.

Members were asked to select three topics that WOA should focus on for the development of a training programme on aquatic animal health. The highest number of responses was related to disease surveillance, detection and reporting, followed by risk analysis (Sections 1, 2 and 4 of the *Aquatic Code*). Members had less interest in training on the quality of Aquatic Animal Health Services and the welfare of farmed fish (Figure 20).

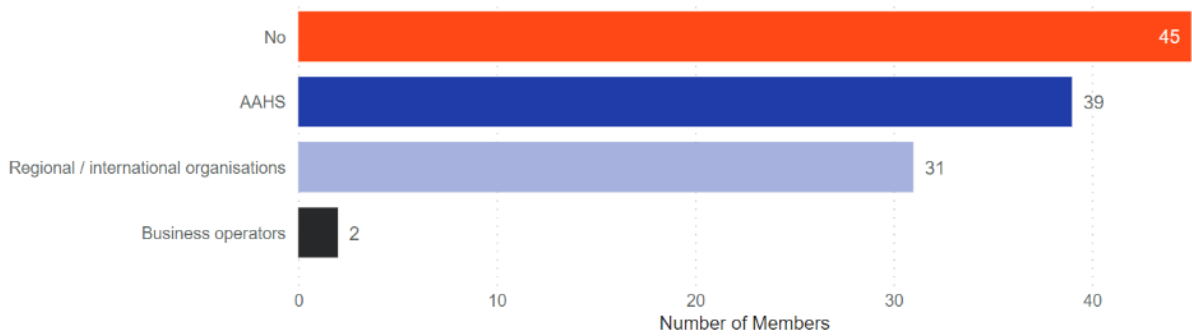


Figure 19: Number of Members who have access (or not) to training materials that could support the implementation of aquatic animal health and welfare standards (the figure shows the various providers that offer training materials and the number of countries that access these materials) [AAHS: Aquatic Animal Health Services]

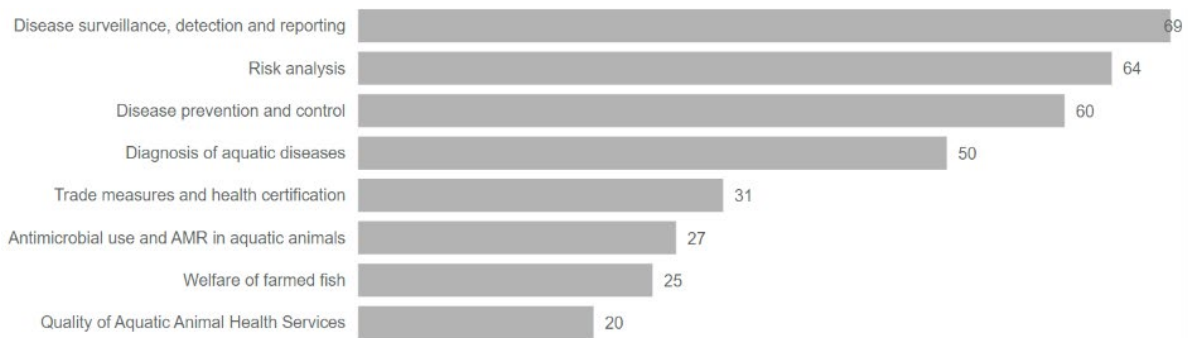


Figure 20: Main topics of interest for training programmes for Aquatic Animal Health Services as expressed by responding Members

Recommendation 16: WOAAH to use the findings from this survey to inform the development of the Terms of Reference of the Competency Package on Aquatic Animal Health and produce eLearning modules for the WOAAH community (Delegates, Focal Points and aquatic animal health professionals). This should include a resource mobilisation strategy to address the limited capacity to invest in training in this field. eModules will be offered free of charge to Members.

Recommendation 17: WOAAH to identify existing training resources, assess them against quality criteria and offer them to the WOAAH learning community. It will look in particular at the resources developed by Members who consider their level of aquatic animal health education to be 'excellent'. Other training resources considered will be those developed by Collaborating Centres, Reference Laboratories and other partners willing to sharing such resources.

Recommendation 18: WOAAH to develop a webinar series for the aquatic animal health community on important aquatic animal health topics. This would be open to Focal Points, Delegates and other professionals of the aquatic animal health community.

Recommendation 19: WOAAH to continue regionally based training for Focal Points for Aquatic Animals, with the support of its Reference Centres, to address issues of regional importance and facilitate timely and comprehensive reporting of aquatic animal diseases to WOAAH.

5. Potential factors influencing the presence of barriers

5.1. Methodology

A summary of the barriers reported by Members in the survey, and the main factors influencing their presence, is provided in this last section. The topics considered for this transversal analysis were 'Outbreak investigation', 'Surveillance and data collection at national level', 'Notification of diseases to WOAHA', 'Requirements in relation to imports and exports' and 'Chapter 4.1. on Biosecurity for aquaculture establishments'.

Descriptive analysis. For each of the five topics mentioned above, the barriers listed in the survey were grouped into three categories: i) barriers related to lack of expertise, ii) barriers related to a lack of national legislation or political will / sector reluctance, and iii) barriers related to lack of resources (human, financial, logistics). This resulted in 15 groups of barriers (three for each of the five topics). ~~a-at least one barrier in a~~ specific group ~~of barriers~~ as blocking or highly impacting was analysed. A score of 1 was attributed to a Member each time at least one barrier in a specific group ~~of barriers~~ was reported as blocking or highly impacting. This generated a score ranging from 0 to 15 for each Member (higher scores reflect a greater number of barriers reported as blocking or highly impacting).

Inferential analysis. Using the scores, a generalised linear model was applied to evaluate the influence of different predictors on the presence of barriers at country level.

The predictors used to build the model were:

- region (five WOAHA regions);
- gross domestic product (GDP) of each Member (most recent year with data available);
- export value of aquatic animals and aquatic animal products, calculated as a percentage of GDP;
- import value of aquatic animals, calculated as a percentage of GDP;
- total production value of aquatic animals, calculated as a percentage of GDP;
- situation of the country with regard to the export of aquatic animals (exporting, not exporting, or planning to export) (data collected through the survey);
- access to education and training material (data collected through the survey).

5.2. Main findings

Descriptive analysis

The percentage of Members that responded that one or more of the group barriers was blocking or highly impacting, is presented in Figure 21.

Resources (human, financial, logistical) constituted the main group of blocking or highly impacting barriers across the topics analysed in the survey.

Thirty-one per cent of Members identified only one or two (out of a possible 15) blocking or highly impacting barrier groups. Thirty-seven per cent of Members reported between 9 and 14 blocking or highly impacting barriers. There were significant variations depending on regions.

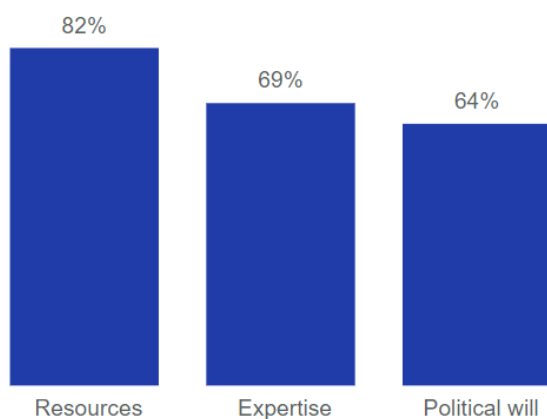


Figure 21. Percentage of Members that reported one or more barriers within a category as blocking or highly impacting.

Inferential analysis

The model showed that there were two predictors that had significant associations with reports of blocking/highly impacting barriers, namely, region and access to education and training material.

For the regions, Members in Africa reported significantly more blocking and highly impacting barriers (average for the region around 10 barriers) than other regions, with Members in Europe reporting the fewest barriers (Figure 22).

There was a strong association between access to education and the reporting of blocking or highly impacting barriers: the better the access to education is, the fewer blocking or highly impacting barriers were reported (Figure 23).

These results suggest that improving access to education may therefore reduce the number of blocking or highly impacting barriers and thus lead to improved implementation of international standards on aquatic animal health and welfare. This is particularly important for some regions, as the data shows important geographical variation.

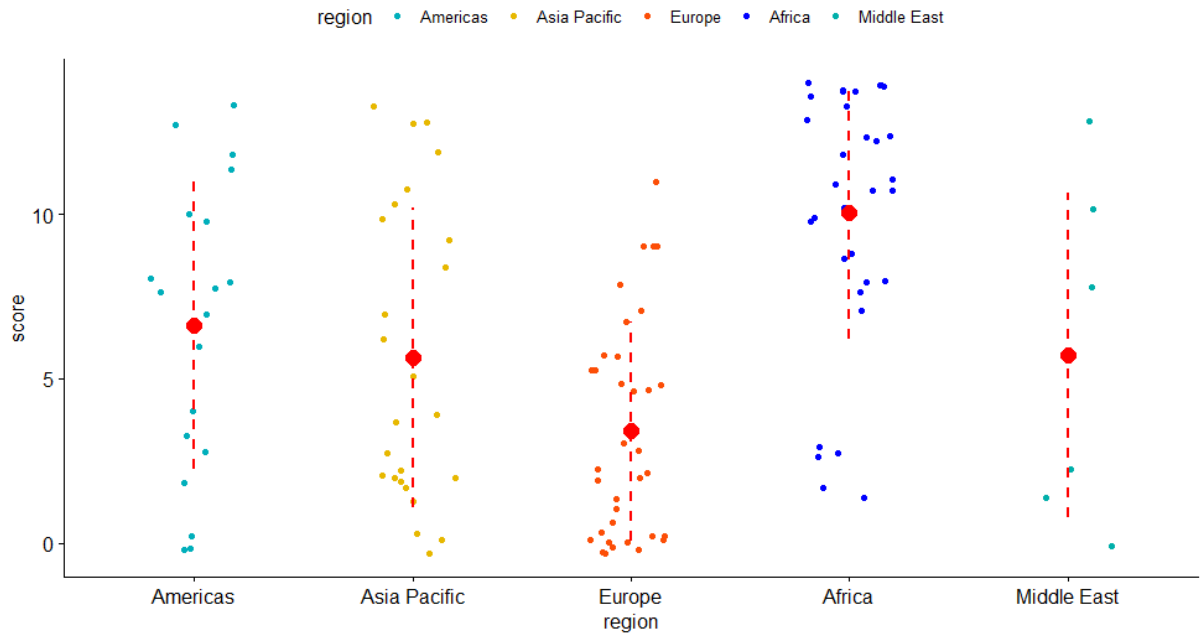


Figure 22. Member scores by regional group (higher scores reflect a greater number of barriers reported as blocking or highly impacting)

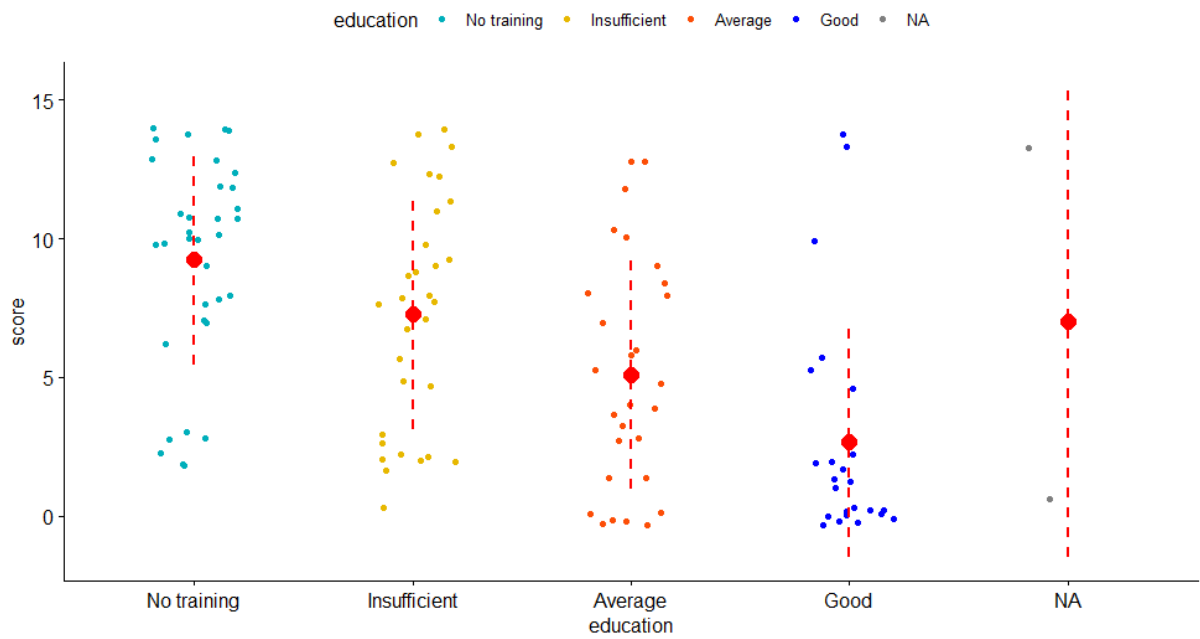


Figure 23. Member scores by education group (higher scores reflect a greater number of barriers reported as blocking or highly impacting) [NA: No information available]

Conclusion

The World Organisation for Animal Health consulted its Members in April–May 2022 to better identify the national barriers to the implementation of its international aquatic standards. A 48-question survey was completed with a 65% participation rate (up to 75% in the Asia–Pacific).

Several barriers to the implementation of WOAHA aquatic standards were identified. The survey indicated that lack of material, financial and human resources, as well as gaps in national regulations, were considered the most important barriers to the implementation of standards and transparency in disease reporting. There were, however, some variations depending on the type of standard; for example, Members' obligation to report aquatic animal diseases to WOAHA was reported to be impacted by specific barriers: the potential impact of notification on trade, the lack of priority given by government agencies to aquatic animal health, the lack of knowledge on notification obligations, and WOAHA notification procedures.

Analysis of the data collected in this survey has demonstrated the strong association between access to education and reporting of blocking and highly impacting barriers. Capacity building for Aquatic Animal Health Services and education activities are key priorities identified throughout the survey. A number of the recommendations provided in this report are already being addressed or will be addressed through the implementation of the WOAHA Aquatic Animal Health Strategy 2021–2025.

Annex 1: Table of compiled recommendations

No.	Recommendation	Who	When
1	Members that do not have a national list of notifiable aquatic animal diseases are encouraged to develop one (also see Recommendations 12 and 15).	Members	Ongoing
2	WOAH to promote regionally coordinated surveillance programmes through the establishment of regional networks for aquatic animal health. Regional programmes will be based on proximity, trade exchanges and risk for disease introduction, spread and impact.	WOAH (RAD, RRs & SRRs)	In progress
3	WOAH to develop and propose capacity building activities to enhance national and regional expertise in aquatic animal disease surveillance and surveillance systems.	WOAH (RAD, RRs, SRRs & WAHIAD)	Start in 2024
4	Members, particularly Members with significant aquatic animal production, are encouraged to invest more resources in improving regional and national surveillance capacity for aquatic animal diseases.	Members	Ongoing
5	WOAH to support diagnostic capacity for Members through the development of network/s of aquatic animal health Reference Centres.	WOAH (RAD & Science Department)	To commence in 2024
6	Members are encouraged to identify national laboratories that could be accredited as a WOA Reference Laboratory or could partner in Laboratory Twinning projects for aquatic animal diseases.	Members	Ongoing
7	Members are encouraged to strengthen their national laboratory diagnostic capacity, performance and quality (also see Recommendation 15).	Members	
8	WOAH Regional and Sub-Regional Representations to continue to encourage and support their Members to notify aquatic animal diseases to WOA in a more timely and comprehensive way.	WOAH (RRs & SRRs)	Ongoing
9	WOAH to develop resources to assist Member Countries and Territories in notifying WOA of cases of aquatic animal diseases. These should include (i) specific training materials on disease notification, including an e-learning module (ii) a training tool kit for Focal Points, and iii) an advocacy paper on the benefits of transparent notification for decision-makers.	WOAH (WAHIAD, CDB & Communication Department)	To commence in 2024
10	WOAH to coordinate the implementation of activities to improve knowledge of disease reporting procedures and obligations among national Focal Points for Aquatic Animals (and national Focal Points for Notification, as relevant).	WOAH (WAHIAD, CBD, RAD, RRs & SRRs)	In progress
11	WOAH to strengthen and further develop its epidemic intelligence activities regarding aquatic animal diseases by, for example, assessing the completeness of WAHIS information regarding aquatic animal health or improving performance of active searching for non-official information to support Members in their official reporting.	WOAH (DID)	2025
12	Members are encouraged to strengthen national aquatic animal health legislation in order to support the implementation of WOA Standards (also see Recommendations 14 and 15).	Members	

13	WOAH to continue to support the scientifically sound development of new standards and the revision of existing standards, in consultation with Members, in order to meet the needs of Members and reduce the barriers to the standards' implementation. This will be achieved through the implementation of Activities 1.1 – 1.5 of the Strategy.	WOAH (Standards Department & Observatory) AAHSC	In progress
14	WOAH to develop additional guidance, including an e-learning module, to assist Members in understanding and using standards.	WOAH (Standards Department, RAD, DID & CBD)	To commence in 2024
15	WOAH will continue to promote and advocate for the use of PVS Evaluations of Aquatic Animal Health Services as the first step in engaging with the PVS Pathway. It will also promote the use of PVS Targeted Support activities, such as the Veterinary Legislation Support Programme (to support Recommendation 12) and the Sustainable Laboratories Programme (to support Recommendation 7). Opportunities for Focal Point trainings and WOAHA regional networks for aquatic animal health will be identified and activities developed, as well as any PVS Pathway activities. This should also include This should also include a resource mobilisation strategy to address the financial barriers.	WOAH (CBD & RAD)	Ongoing
16	WOAH to use the findings from this survey to inform the development of the Terms of Reference of the Competency Package on Aquatic Animal Health and produce e-learning modules for the WOAHA community (Delegates, Focal Points and aquatic animal health professionals). This should include a resource mobilisation strategy to address the limited capacity to invest in training in this field. e-modules will be offered free of charge to Members.	WOAH (CBD)	To commence in early 2024
17	WOAH to identify existing training resources, assess them against quality criteria and offer them to the WOAHA learning community. It will look in particular at the resources developed by Members who consider their level of aquatic animal health education to be 'excellent'. Other training resources considered will be those developed by Collaborating Centres, Reference Laboratories and other partners willing to sharing such resources.	WOAH (CBD)	2024 and beyond
18	WOAH to develop a webinar series for the aquatic animal health community on important aquatic animal health topics. This would be open to Focal Points, Delegates and other professionals of the aquatic animal health community.	WOAH (RAD & Standards Department)	2024 and beyond
19	WOAH to continue regionally based training for Focal Points for Aquatic Animals, with the support of its Reference Centres, to address issues of regional importance and facilitate timely and comprehensive reporting of aquatic animal diseases to WOAHA.	WOAH (RAD, RRs & SRRs) Reference Centres	Ongoing

AAHSC: Aquatic Animal Health Standards Commission
 CBD: Capacity Building Department
 DID: Data Integration Department
 RAD: Regional Activities Department

RR: Regional Representation
 SRR: Sub-Regional Representation
 WAHIAD: World Animal Health Information and Analysis Department