IATTC – AIDCP

2nd Informal Consultation between The IATTC Committee on Administration and Finance (CAF) and the Ad Hoc Working Group on the Financial Strengthening of the AIDCP (WGFSA)

2:00 – 6:00 pm (Pacific time)
(Virtual format)

20 – 21 May 2026

Request from the Joint Working Group CAF-WGFSA

SUMMARY

The staff of the Inter-American Tropical Tuna Commission (IATTC) has prepared this document in response to a request from the Joint Working Group of the IATTC Committee on Administration and Finance (CAF) and the Ad Hoc Working Group on the Financial Strengthening of the AIDCP (WGFSA).

The document prepared in response to the request:

2.…

> *Request the Secretariat prepare a report … of the costs of including longline observers for large … [and] small scale longliners, … broken down by vessel category, at a 5% and 100% coverage level. …[D]escribe the scientific and compliance benefits of having an intensive observer program… what would be the cost to the IATTC and to the CPCs if the 30/70 formula is applied (30% IATTC, 70% countries with fleets)*
>
> *The same applies in the scenario of a 50/50 split: what would the cost be to the IATTC … and … to the countries with these fleets. The report should additionally describe the scientific and compliance benefits of having an intensive observer program in the longline fleet.*

Initial considerations and premises.

This analysis assumes that the cost estimation is for a human observer program. It will also reflect the shortcomings of different data provided by the CPCs under certain IATTC Resolutions, but this, in no manner, should be considered a measure of compliance. Although some of the statements may be conducive to improve resolutions or the quality of the data provided, this is not the aim of the document.

This analysis will consider that observers will collect data at sea on paper forms. Using computers/tablets for data input at sea, would significantly increase the initial costs of the program. Also, the assumption is that observers will be available for one-to-one debriefing with the staff and that the completed forms will be captured by data-entry staff. Once the data is digitized, staff familiar with the fishery and the data collection process would need to perform reviews for data quality controls, a process called data editing.

To build this database and write executables for data entry, data editing and data analysis, a programmer and a data analyst are needed.

The initial assessment will consider that the observer program, in its entirety, including observer coverage and management of the observers, would be performed by the IATTC staff.

As per operations, it is important to consider the characteristics of the participating vessels in this fishery. There are three main participant fleets in the fishery:

1. Long-distance longline fishing vessels (LDLV) over 20 m in length (LLV>20). These industrial vessels operate in far offshore waters, mainly international waters, and distant EEZs. They normally, have larger storage capacity, usually over 100 t, and use refrigerated holds after freezing the product.

   For the most part, this fleet fishes in the western side of the IATTC Convention area (WEPO) and make longer trips because they take advantage of the possibility to transship their catches at sea to carrier vessels, as allowed in Resolution C-22-03, while also utilizing bunkering vessels that supplies them with fuel, water, other provisions and, occasionally, crew replacement.

Another important aspect of this fleet is that, when on the fishing grounds, the operations are close to 24 hours daily. This is possible because crew works on shifts of eight hours or more.

2. Another component of the fleet are the LLV>20m, but fishing mostly in its own EEZ areas and operating mainly in the eastern side of the IATTC Convention area (EEPO). This fleet do not perform transshipments or bunkering at sea. These vessels have a mix of storage methods including ice. In this category there is also a notable difference in operations. While some vessels operate independently, at least 20% of this fleet (over 100 vessels), depart in groups with up to 20 vessels, usually smaller than 20 m, fishing in coordination. Once at the fishing grounds, the larger vessel, operating as a mother ship, *deploys* the smaller boats, and serves as the storage hold for the catch of these, as well as the provision supplier including bait. The mother ship itself is also a fishing vessel.
3. Longline fishing vessels 20 m in length or shorter (LLV≤20m). As noted above, some of these vessels operate in conjunction with a larger mother ship.

Requirements for an observer program

To determine the cost of implementing an observer program it is necessary to understand with certain precision the activities of the fleet that is to be observed. Some of the most important elements for the design of an observer program for the longline fishery include knowing the number of vessels actively participating in the fishery, the number of trips that these vessels make during the year, and the number of days at sea (days of absence – DOA) for these trips. This information would allow to calculate the number of observers necessary to cover sampling, according to the desired percentage.

Observers needed

The number of observers needed is directly proportional to the number of trips, or better yet, the number of DOA which are not the same as the effective days of fishing.

Paragraph 6 of Resolution C-19-08 requires that CPCs provide the IATTC staff with information, about operations of the longline fleet over 20 m of length (LL>20) in the EPO (Annex A of the resolution – Report A), including the number of active fishing vessels, the number of trips made, the number of trips observed, the range of the dates in the report, the number of effective days of fishing and those observed. Paragraph 7 of the Resolution requires CPCs to provide operational data collected by observers (Annex B of the Resolution – Report B)

Not all CPCs comply with all the requirements and therefore some assumed calculations had to be made to determine the expected number of trips and the DOA, essential for calculations of the costs associated with observer coverage.

Analysis of cost for an observer program for LL>20 at 100%

Observers required

From Report A, the staff used the data provided by CPCs for 2024, the last year available. As noted, not all CPCs provide such information and even those that provide the information, the data has certain shortcomings that made necessary to calculate some values based on the operational data from Report B. For these, we used values for the period 2015-2024, mainly, to obtain the ranges and averages of DOA and the estimation of number of trips

Table 1 shows the flags of the LL>20m from the IATTC’s VR active vessels.

As indicated, Report A does not provide the DOA of each trip but rather the number of effective days of fishing or the number of hooks.

Table 1. Flags of CPCs with LL >20m in the RVR

Chile	French Polynesia	Panama
China	Japan	Peru
Chinese Taipei	Korea	United States
Costa Rica	Mexico	Vanuatu
Ecuador	Nicaragua	Venezuela
European Union		

A value for the DOAs was obtained by calculating the average of the date differences between arrivals and departure from Report B for each CPC and here is where we found a significant difference in the operation of the fleet.

The EEPO fleet includes the flags of the CPCs in the American continent, the EU, and French Polynesia. The rest of the CPCs were pooled in the WEPO fleet, which are basically the same as the LDLV.

The average DOA for the EEPO LL>20m was 25.58 days, while the DOA for the WEPO LL>20m was 181.19 days.

Finally, to have a complete analysis of the whole LL>20m, we also used the information in the IATTC's regional vessel register (RVR) when data from a particular CPC was not available at all, either from Report A or B. As such, it was assumed that all LL>20m in the RRV for each CPC not providing data, participate in the fishery and the average number of trips calculated would apply to all those vessels.

Using this formula, it was estimated that 667 vessels participate in the fishery in the Convention Area, making a total of 3,884 trips and accumulating 192,059 days at sea.

As a reference, in 2024, the onboard observer program of the AIDCP sampled 1,067 trips of 190 participating vessels, with 304 observers, accumulating 35,540 DOA.

Direct costs

Observer days at sea

The main direct cost is derived from the observer's wages for each DOA. It should be noted that while the AIDCP observer program places Spanish speaker natives from Latin-American countries on purse seine vessels, this program would require observers that are proficient in other languages, mainly English, to communicate with the crew. It would be desirable if observers onboard fleets of non-Spanish-speaking CPCs, were nationals of those CPCs as this would facilitate communications onboard, as well as during traveling when boarding vessels at foreign ports.

In general, observers onboard these vessels, even the larger ones, would require to be accommodated in smaller quarters than those in the AIDCP observer program, normally with less comforts and, on occasions, spending very long periods at sea on deployments lasting more than 6 months. Because of this, the staff considers that remuneration should be commensurable with this and their country of residence and therefore two different daily scales were considered; one for observers on US vessels and vessels operating out of the ports of the south Pacific Island and Asian nations (d), and another for observers onboard of vessels operating from vessels in the Latin-American nations (US $120).

Assuming that observers would be willing to make very long trips in LDLVs, a real 100% coverage of the effort, measured in effective days of fishing or number of hooks used, would require at least 3 observers that can work eight-hour shifts for the duration of the trip, without resting days.

The following observer-related items would reflect placing 3 observers in LDLVs.

DOA observer compensation: US $91,966,560

Observer days traveling

Observers would need to travel to and from their assignments, and although many of these will be short, those that travel to the South Pacific will have challenges because of the sometimes-spotty availability of travel in the south Pacific and migration requirements. Additionally, observers would have to receive *per diem*, or the program would have to contract agents to ensure and cover for their travel arrangements which would have to be reimbursed at a later time. In this case, we used data provided in the invoices of the transshipment program sampled by MRAG observers, where travel day compensation was about 10% of their DOA compensation, and per-diem at 150% of those for sea days.

Compensation for observer's travel: US $13,794,984

Airfare/ Transportation

This is a difficult and sometimes unpredictable item to forecast, not only because of price variation, but also because it is difficult to predict the port of the end of the trip for many vessels and transportation tickets may have to be purchased on short notice.

Using MRAG invoices for the transshipment observer program, the average cost of travel is about US $1,600 per observer trip (about US $800 each way), but it is likely that the cost for vessels that use only Latin-American ports would be much lower. Considering that the distribution of the calculated number of trips is similar between the two fleets, we used an average of US $800 per total trip.

Observer' airfare/transportation: US $3,107,173

Observer training

As noted above, the calculated number of trips for the LL fleet is 3,884. If a comparison with the AIDCP observer program is performed, where 1,067 trips were sampled by 304 different observers in 2024. The quotient of those, results in 3.5 trips per observer. If we use the same value for the LL fleet adding the considerations stated above for LDLVs regarding the number of observers required for one trip, the result is that the program would have to train 1,879 observers.

The IATTC staff recommends training sessions of a maximum of 25 trainees per session for best academic achievement and personalized instruction. Our experience is that about 20% of trainees do not reach the desired goals at the required level, so it would be necessary to train about 2,254 candidates in 90 sessions to obtain the desired number of observers.

The calculation for the cost of observer training would involve determining the number of training days, the number of trainees participating, the cost of training facilities and the compensation that trainees would receive during training.

We calculate that training would have to last at least 4 weeks and be done in a city where fresh specimen of different species would be available.

Currently, the budget for observer training in the AIDCP is US $30,000. This includes cost of trainees and trainers for 2 sessions of 3 weeks each or US$ 5,000 per week. Using the same estimate of cost for 90 sessions of 4 weeks, the total budget is shown below.

Observer training, 220 weeks: US $1,803,533

The above stated figure reflects the cost at the beginning of the program. Observer training would have to be scheduled throughout the life of the program to account for attrition, but at this stage, calculating this would be impossible.

Safety gear

Although Resolution A-18-02 applies only to the AIDCP, most international observer programs require that observers carry with them two different systems designed for their safety at sea. A two-way communication device that does not rely on internet broadband provided by the vessel, and a personal locator beacon (PLB) that provides location during a distress situation to an internation satellite-aided tracking system, to an international search and rescue organization (SARSAT).

The AIDCP observers use Garmin's inReach marine devices and ARC's ResQLink PLB devices. If a pair of devices were assigned to each of the calculated vessels participating in the fishery, it would be necessary to acquire 667 pairs of devices (one per vessel) at a cost of US $350 and US $ 480 respectively. Additionally, the operation of the two-way communication devices requires paying monthly subscription plans, like those of mobile phones the lowest annual subscription professional plan is US$ 240 per unit, per year.

Safety devices: US $713,690 (includes subscription plan for 667 two-way communication devices).

The above stated figure reflects the cost at the beginning of the program. After the first year, a budget for replacing gear and paying the above-mentioned subscription would be necessary. Considering that the life-spawn of the devices are about 5 years and that subscriptions remain the same, the annual cost for the program, after the first year would be US $270,802.

Observer supplies and equipment.

For this item, we decided to use the rate of the same item per trip as noted in document AIDCP-51-01, which documents the budget for the AIDCP. We used the line for 2021 because further years include safety gear cost, already noted above. In that year, only 491 trips were sampled by IATTC observers due to the pandemic.

Observer's supplies: US $76,350

Indirect costs

Staff

Although the IATTC staff already counts with a database that can handle the summary information and partial operational information provided by the CPCs, a more robust system, including *ad-hoc* executable computer programs, to key and edit (data quality control) the information provided by observers would need to be developed by a software engineer.

The engineer would have to also ensure the integrity of the data structure, all scalability requirements, and performance needs, using robust relational database managers such as SQL, Oracle, or other.

System level programmer: US $170,000 (includes benefits)

Once the software is developed, data editors would be needed to provide data quality control. Database analyst would be needed to provide information required by CPCs for science or compliance overlook or to provide assistance to scientists, identifying the qualities and shortcomings of the data for their studies.

Currently, the AIDCP uses 8 data entry/data editor to process the data. Using the number of AIDCP's DOA for 2024, (35,540), and dividing with among 8 editors, the result is that each can process 4,442 DOA per year. Extrapolating this number to the 192,059 DOA expected to be sampled in the long-line fishery, the result is that 43 data-entry/editors would be needed.

The staff in this item would also be in charge of writing instruction material and perform observer training

Data-entry/ data editor staff (43): US $3,242,779 (includes benefits)
Data analyst (1): US $110,000 (includes benefits)

Computers and peripherals (43), and 2 printers.

Computer Equipment: US $43,237

Finally, this number of employees would require a place to perform its duties that would be greater than what is currently supported at the La Jolla Headquarters. A calculation for workspace for close to 50 employees may depend on the location of the site and it is not included in this analysis.

Table 2 shows the summary of all costs.

Table 2. Summary of costs for a program with 100% coverage for LL vessels >20m.

Item	Cost (US$)
Obs. compensation	$ 91,966,560
Obs travel compens.	$ 13,794,984
Airfare	$ 3,107,173
Training	$ 1,803,533
Safety devices/Subs	$ 713,690
Observer supplies	$ 76,350
Programmer	$ 170,000
Data entry/editing	$ 3,242,779
Data Analyst	$ 110,000
Computer equipment	$ 43,237
Total	**$ 115,028,306**

Caveats of sampling LL>20m vessels.

To sample the WEPO fleet that spends months and possible years at sea it would be necessary to create relieve schedules at a predetermined number of days. This would allow not only to sample more vessels, reducing bias, but, but also to allow sampling seasonally, when sampling less than 100%. The logistics of these relieves would need to be coordinated with bunkering or transshipping vessels, at an increased cost.

Calculations for an observer program for LL ≤ 20m.

This estimate proved to be much more difficult because of several issues:

1. Resolution C-19-08 does not require operational data provision for vessels of this size.
2. Although Resolution C-24-07 requires that CPCs provide to the Director the list of vessels that have been authorized to fish in the Antigua Convention Area for species covered by the Convention, the staff has information that not all of these vessels are included and, in fact, most of the operational data provided to the IATTC are for vessels not in the RVR.
3. There is no resolution that requires CPCs to provide operational information for LL≤20m.
4. The size and operational logistics of smaller vessels may not allow to have observers on board without affecting fishing operations.

Notwithstanding these shortcomings, the IATTC staff does have operational data for some of the CPCs which allowed us, to the best of our abilities, to estimate the cost for an observer program for this fleet, on the premise that it would be feasible to place observers on these vessels. Further comments below will discuss additional challenges to consider.

For this analysis, operational data described above was used for the period 2015 to 2023. All vessels in this size category belong to 3 flags. Most of the data (98%) comes from one CPC. Using the data available from these CPCs, it was calculated that the average DOAs was 23.6 days per trip. Table 3 show the CPCs with longline vessels with length of length ≤ 20 m in the RVR.

Regarding the number of trips, it was calculated that the data provided average was 1.58 trips per year, but as there is no indication of the percentage of sampling in this provided data, it is impossible to determine if this is a number that can be extrapolated to 100% coverage. For example, one CPC reports an average of 694 trips per year, mostly by vessels not in the RVR. The other two CPCs report an average of 7.8 trips per year.

For the purpose of this exercise, we used the average number of trips for that one CPC and 7.8 trips per year for each of the CPCs that have LL vessels with length ≤ 20 m in the RVR, and we assumed that the one CPC providing most of the data is doing it at 100% coverage, this is, that there are an average of 694 trips per year. An additional assumption is that all vessels in the RVR for CPCs that we have no operational data, are actively fishing in the Antigua Convention Area.

CPCs with longline vessels ≤ 20 m of length in the RVR are: Chile, Costa Rica, Ecuador, El Salvador, French Polynesia, Mexico, Nicaragua, Panama and the United States with a total of 385 vessels.

The calculated number of trips is 3,541 and the calculated number of DOAs for those trips is 83,572.

For the calculation of the cost for sampling this fleet at 100%, a similar analysis of AIDCP costs for observers on LL vessels >20 m used in table 2 was made with some differences. Table 3 present the calculations of cost of this fleet.

Some other considerations:

1. Since observers would not need to be proficient in English, except for those observing the French Polynesia and US fleet, the compensation estimated was less than those for the larger vessels, at US $75 per DOA, except for observers for fleets with higher cost of living where the same compensation was used as for those on larger vessels (US$250).
2. Additional data analysts and programmers is not included as those hired for larger vessels could do the same work. Nonetheless, additional data-entry personnel would be needed (19).

Table 3. Summary of costs for a program with 100% coverage for LL≤20m vessels.

Item	Cost
Obs. compensation	$ 8,812,925
Obs. travel comp.	$ 660,969
Airfare	$ 2,832,800
Training	$ 291,374
Safety devices	$ 713,690
Supplies	$ 69,608
Data entry/editing	$ 1,411,054
Equipment	$ 18,814
Total	**$ 14,811,234**

Caveats regarding sampling smaller LL vessels

The IATTC staff considers that sampling smaller vessels with human observers, at any level, would be almost impossible for different reasons, including the following:

1. It is very likely that the operation on smaller vessels would be hindered by the mere presence of the observer. Small quarters to work would mean also small space for the observer to perform his duties or the operators to handle fishing operations in a safe manner.

2. A large portion of this fleet operates in *tandem*. A larger vessel departs with several other vessels attached, up to a couple dozen, and at arrival to the fishing grounds serves as a mother ship d*eploying* the smaller vessels while fishing too and serving as the cold storage of the catch and suppling baith, fuel, storage and other provisions. Placing observers at 100% rate, may require having almost as many observers as crew onboard.

3. Census of smaller LL vessels are difficult to perform and require a lot of effort. Most CPCs in Latin America have indicated that an accurate number of participating vessels is difficult to assess. The IATTC staff is certain that the RVR does not include all LL ≤ 20m vessels operating in the Convention Area; therefore, Table 3 contains a very significant underestimation.

Calculations for an observer program for all longline vessels regardless of size on different levels and combinations of observer provider/manager.

Table 4 shows the estimate of cost for an observer program for all longline vessels combined, sampled at 100%

Table 4. Summary of costs for a program with 100% coverage for all LL vessels

Item	Cost
Obs. compensation	$ 100,779,485
Obs travel compens.	$ 14,455,953
Airfare	$ 5,939,173
Training	$ 2,094,907
Safety devices/Subs	$ 1,427,380

Item	Cost
Observer supplies	$ 145,958
Programmer	$ 170,000
Data entry/editing	$ 4,653,833
Data Analyst	$ 110,000
Computer equipment	$ 62,051
Total	**$ 129,839,540**

Table 5 shows the estimated cost of different sampling schemes. The first two, managed completely by the IATTC, the rest on a combination of samples by a national program and IATTC, including a percentage similar to that of the AIDCP, where the IATTC would bear the cost of 30% of the sampling, and each CPC or national program, would bear the cost of the rest.

The calculations assume that the remuneration of national program observers is as indicated above and that all permanent national program staff needed is also in the same pay scale that what was calculated above.

Finally, the assumption also is that all CPCs provide detail and accurate information to the IATTC staff, of all of its LL vessels authorized and actively participating in the fishery for tunas in the Convention area, in real time, so that the design of the observer program rotation would allow for unbiased distribution.

Table 5. Summary of costs for a program for all LL vessels, with different levels of coverage at different rates of management.

Sampling at diferent levels managed by IATTC			
Cov. Level	IATTC	National	Total
100%	$ 129,839,540	$ -	$ 129,839,540
5%	$ 6,491,977	$ -	$ 6,491,977

Sampling managed by IATTC (30%) and National Programs (70%)			
Cov. Level	IATTC	National	Total
100%	$ 38,951,862	$ 90,887,678	$ 129,839,540
5%	$ 1,947,593	$ 4,544,384	$ 6,491,977

Sampling managed by IATTC and National Programs (50% / 50%)			
Cov. Level	IATTC	National	Total
100%	$ 64,919,770	$ 64,919,770	$ 129,839,540
5%	$ 3,245,988	$ 3,245,988	$ 6,491,977

Benefits of an intensive observer program for science and compliance. Tropical tunas.

Having a representative sample would allow also identify gear effect on catch rates and abundance. Observers could also provide an estimate of the size composition of the longline catch. Currently, there is limited data on size composition in the IATTC database. Any increase would be beneficial.

It is also important to understand the impact of the gear in the fishery. Figure 1 shows the catches of three different fishing gears in the EPO for the three tropical species of tuna (BET, SKJ and YFT).

Although the total catch has increased in the last couple of years, the proportion for the LL fleet has been reduced to about 4% annually. Nonetheless, despite representing a small percentage of the EPO catch of tropical tunas, the benefits stated above still apply.

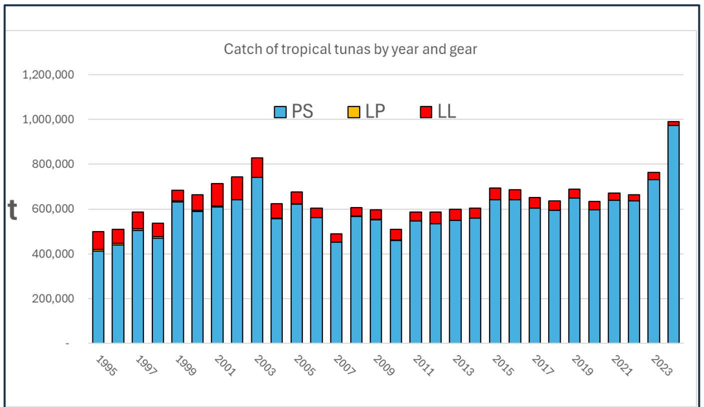

Figure 1. Catch of tropical tunas in the EPO

On the other hand, figure 2 shows the catches of the two temperate tunas (ALB and PBF), in which the LL fleet dominates, but the level of catch is several orders of magnitude less in comparison with figure 1; this is, the total catch of temperate tunas is around 20 of orders of magnitude less, of that of the tropical tunas. Nonetheless, over the last couple of years, the catch of the LL fleet is about 70% of the total.

Observer programs produce statistically robust catch estimates that can be used for the management of the different populations. Additional sampling like size of catch could complement abundance estimation models and recruitment estimation.

Bycatch

This is probably where a well-developed observer program would provide a more robust information of gear catch data, number and types of hooks in specific areas, or detailed characteristics of different fishing methods like shallow and deep sets which could provide clues to reduce catch of species not intended to be targeted, particularly for those that are considered threatened or endangered.

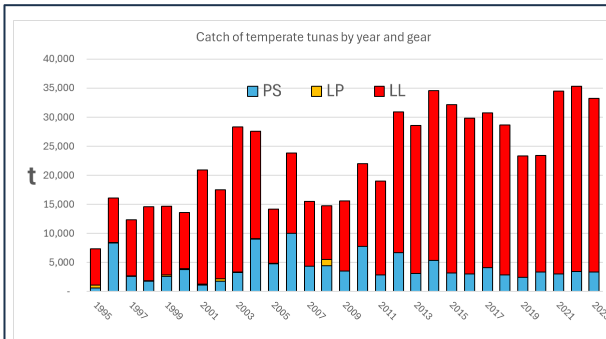

Figure 2. Catch of temperate tunas in the EPO

Higher levels of observer coverage would generate more representative data for the longline fleets, which would greatly improve estimates of total bycatch and hence lead to more effective management measures.

Compliance and certification

An observer program at 100% coverage could be useful for certification with commercial purposes. Although this is a topic of discussion because some scientists do not consider that observer data should be use for this due to risk to introduce bias, by ensuring that CPCs have data to monitor compliance with management measure requirements, certification is possible.

The level of sampling coverage of an observer program will determine how representative the data are for the various uses stated above. A coverage of 5% is often taken as a starting point, however, it has been shown by many studies to be too low a level of coverage to produce representative data for the fleet for many purposes. Catch estimates, including catch by area and season may be biased and/or have low precision. Catch events of rare protected, threatened or endangered species are very likely to be also underrepresented in the data or missed entirely. Reliable monitoring of compliance intended to mitigate interactions and/or catch of these species is likely not possible.

At a higher rate of sampling coverage, the observer data may produce reliable catch estimates for the most frequently caught species, as well as age composition of the catch if length-frequency sample is available. It would also increase the likelihood of detecting interactions with rare, protected or endangered species, thus documenting compliance or a lack thereof.

At levels above 20%, the reliability, and hence utility, of estimates produced using observer data would improve. Considering the operational difficulties discussed and the high cost of human observers, alternatives must be considered. For example, a combination of some human observers and a larger coverage of electronic monitoring complementing it.