#  PROJECT 90 ­- Draft plan for a project to acquire better data to determine fish length/weight

| **PROJECT 90.****Better data on fish weights and lengths for scientific analyses** |
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| **#XX** |
| **Project** | **Better data on fish weights and lengths for scientific analyses** |
| Objectives | This project has three objectives The first component aims to identify gaps, address those gaps which can be resolved with existing information, and develop the sampling plan and protocol to resolve additional gaps, through the following activities (but not limited to):* identify the priority gaps in conversion factor data for the WCPFC key tuna species, key shark species, and key billfish species
* expand the conversion factors to cover the WCPFC key shark species for groups: mako, thresher and hammerhead shark, after gap analysis against existing conversion factors
* produce a list of species of special interest (SSIs, excluding key shark species) that require conversion factor data
* produce a list of commercially important bycatch species (not covered in the items above)
* include more information on source of data for each conversion factor (e.g. reference of study, sample size, R2, minimum/maximum size of sample, etc.) in tables of conversion factors which will inform the need for more data collection
* produce a list of the remaining bycatch species that require conversion factor data
* produce standard protocols for conversion factor data collection to be collected by observers and port samplers,
* prioritize this list so that the most important work is achieved, and
* present the findings at SC15 for review, acknowledging that some observer providers will voluntarily collect conversion factor data prior to SC15.

The second component relates to investigating potential innovative methods to obtain length-length conversion factor data, including:* explore the use of EM tools to capture multiple length measurements from fish e-measured by EM Analysts.

The third component relates to collecting the conversion factor data:* systematically collect representative samples of length measurements of bycatch species support future estimation of fish bycatch in the WCPO; and
* systematically collect length:length, length:weight and weight:weight data on all species to better inform future estimation of fish bycatch in the WCPO.
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| Note | Although these three objectives are distinct, they have been combined into a single project to avoid any possible duplication of effort and, as there will likely be combined tasking of Pacific Island observers and port-samplers, in future data collection arising from the project.The project acknowledges that flag state CCMs with national port sampling and observer programmes may also want to collect conversion factor data using the standard protocols established under this project; these initiatives would be an invaluable contribution to the project.The project will also involve the work in transferring the conversion factor information compiled from other sources, such as the information presented in Clarke et al. (2015) *Report of the Pacific Shark Life History Expert Panel Workshop, 28-30 April 2015; WCPFC-SC11-2015/EB-IP-13*, and conversion factor data compiled from the Australia domestic longline fishery. Project 90 implementation acknowledges that issues of observer safety, overall workload and work conditions are paramount. The development of the data collection protocols for conversion factor measurements through observers should take into account the challenges with on-board observer activities, including, but not limited to;* Potential difficulty in measuring large specimens on small boats;
* Evaluating the feasibility of weighing fish at sea.  For example, consideration of the following:
	+ Ensure any weighing equipment does not hinder the fishing operation.
	+ Simplifying the process of any onboard weight measurements;
	+ To what extent the assistance of the crew will be expected, and
	+ Avoiding duplicate weighing of specimens by keeping and weighing removals.
* Note that any sharks which fishers are not allowed to retain will not be in the observer protocol for this project.
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| Rationale | Estimates of bycatch are currently collected through the ROP in units of number, weight or both. In order to convert from numbers to weight, and vice versa, it is necessary to have information on both the size of caught individuals, and appropriate length:weight relationships for the species in question. This conversion between numbers and weight allows analyses of bycatch data to use the full observer dataset, rather than a subset with a consistent unit of measurement, therefore maximising the utility of the bycatch data recorded by observers. Furthermore, bycatch length data allows for consideration of the life-stages of individuals. This information could be of particular interest when considering bycatches of SSIs. There are currently insufficient, or unrepresentative, length samples for species caught in purse seine and longline fisheries, with the exception of bigeye, yellowfin and bigeye in purse seine catches, which are sampled through observer grab samples. This project would fill this data gap.At least SEVEN (7) Pacific Island member countries with observer programmes have expressed interest in participating in conversion factor data collection, as long as funding support is available to cover any reasonable request for the additional work required by observers and port samplers.  Accordingly, this project addresses objectives arising from discussions at SC13 about the results of regional estimates of purse seine and longline bycatch (Peatman et al., 2017; Peatman et al., 2018a; Peatman et al., 2018b). As a result of the discussions in 2017, SC13 recommended that the Scientific Service Provider be tasked with:* designing and co-ordinating the systematic collection of representative samples of length measurements of bycatch species; and
* a project to design and co-ordinate the systematic collection of length:length, length:weight and weight:weight data on all species to better inform bycatch estimation.
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| Assumptions | Achievement of the objectives is subject to the following assumptions:* sufficient data are available to support the sampling design analyses;
* sampling designs can be developed which are statistically robust and would support future estimation of fish bycatch in the WCPO;
* current observer equipment (e.g. calipers) is suitable for the length sampling protocols;
* suitable and cost-effective equipment can be sourced for robust weight data collection;
* data collection can be integrated into existing sampling events in-port and at-sea;.
* resources are available within selected countries to undertake this work; and
* the sub-regional DCC observer conversion factors form will be the basis for data collection.
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| Scope | The proposed work programme comprises:* data compilation activities;
* subsequent statistical analysis activities to design future sampling approaches;
* evaluation of designs for practical field application;
* trials of selected sampling approaches in the field along with trials of equipment required to complete the sampling designs;
* finalisation of future sampling protocols;
* development of associated training standards;
* incorporation of training into trainer trainings and biological sampling trainings as required;
* ongoing co-ordination of sample collection and data submission; and
* reporting on designs and progress with implementation and data collection.

It is intended that a preliminary report would be prepared for SC15 and a more comprehensive report for SC16 and a final report at SC17. |
| Timeframe | 33 months (from January 2019 through September 2021) |
| Budget | 2019 US$60,0002020 US$30,0002021 US$20,000Note that this funding is intended to cover the work of the Scientific Services Provider in the design and co-ordination of this work. This will cover the analytical components identified in the scope of the project. It will also cover trials of methodologies identified at-sea and in-port. The funding in 2019 includes the costs to cover the additional work for selected observers from some observer providers, which will inform the process for refining the budget for this project in subsequent years. The 2019 funding also includes the costs to investigate and purchase 1-2 weighing devices in the initial implementation phase. It does not cover the costs of CCMs in implementing the protocols or the purchase of related equipment. This will require co-funding or additional funding depending on the designs selected in the design and testing phase and may require additional requests for funding from SC15.  |
| References | Peatman, T., Allain, V., Caillot, S., Williams, P., and Smith, N. 2017. Summary of purse seine fishery bycatch at a regional scale, 2003-2016. SC13-ST-WP-05. Thirteenth regular session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Rarotonga, Cook Islands, 9-17 August 2017.Peatman, T., Bell, L., Allain, V., Caillot, S., Williams, P., Tuiloma, I., Panizza, A., Tremblay-Boyer, L., Fukofuka, S., and Smith, N. 2018a. Summary of longline fishery bycatch at a regional scale, 2003-2017. SC13-ST-WP-02. Fourteenth regular session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Busan, Republic of Korea, 8-16 August 2018.Peatman, T., Allain, V., Caillot, S., Park, T., Williams, P., Tuiloma, I., Panizza, A., Fukofuka, S., and Smith, N. 2018b. Summary of purse seine fishery bycatch at a regional scale, 2003-2017. SC13-ST-IP-04. Fourteenth regular session of the Scientific Committee of the Western and Central Pacific Fisheries Commission. Busan, Republic of Korea, 8-16 August 2018. |