Case Study

(used by CMFRI, India)

Sampling Methodology

used by the Central Marine Fisheries Research Institute(CMFRI), Kochi, India for Monitoring the Fishery and Estimation of Fish Landings in

India – A Model for Developing Countries

Introduction (Continued)

- Marine fish landings take place almost all along the coastline throughout the day and sometimes during the night.

- Under these circumstances, the collection of statistics by complete enumeration would involve a very large number of enumerators and a huge amount of money apart from the time involved in the collection of data.

Introduction (Continued)

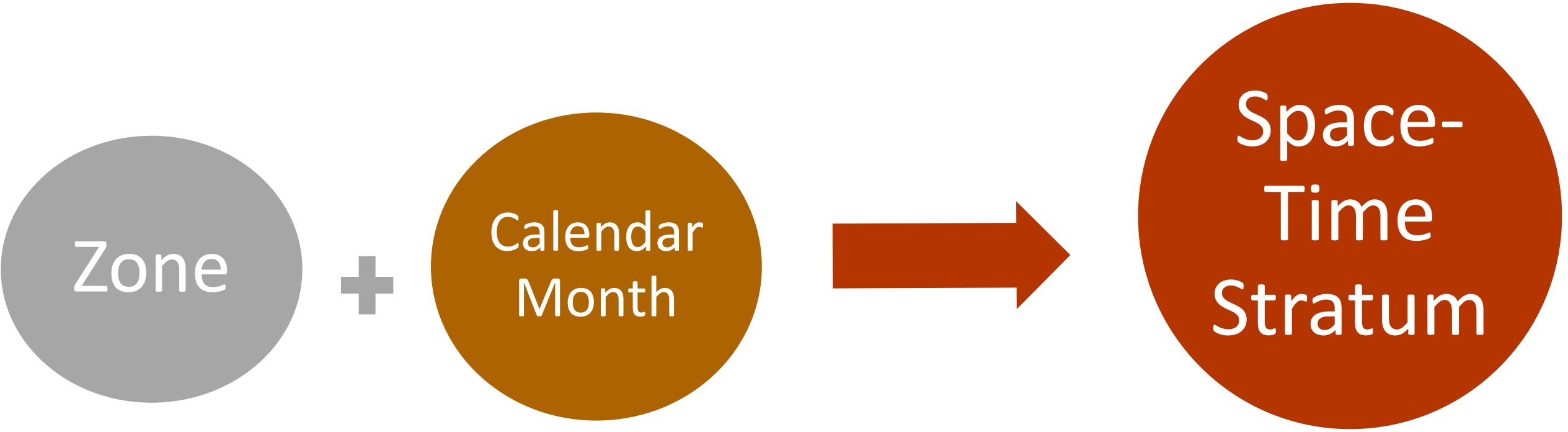
As monitoring and assessment of the exploited marine fishery resources of India is one of the important mandates of the CMFRI, the institute made attempts to evolve the scientific methods for the collection of data on catch and effort, since its inception in 1947.

Stratification over space in India for Fisheries Management:

Introduction (Continued)

- CMFRI introduced the collection of marine fish statistics through a stratified sampling design along the west coast of India in the year 1959 and extended it to other states over the years.
- Keeping in pace with the changing marine fisheries scenario, the sampling design has been modified over time.

METHODOLOGY



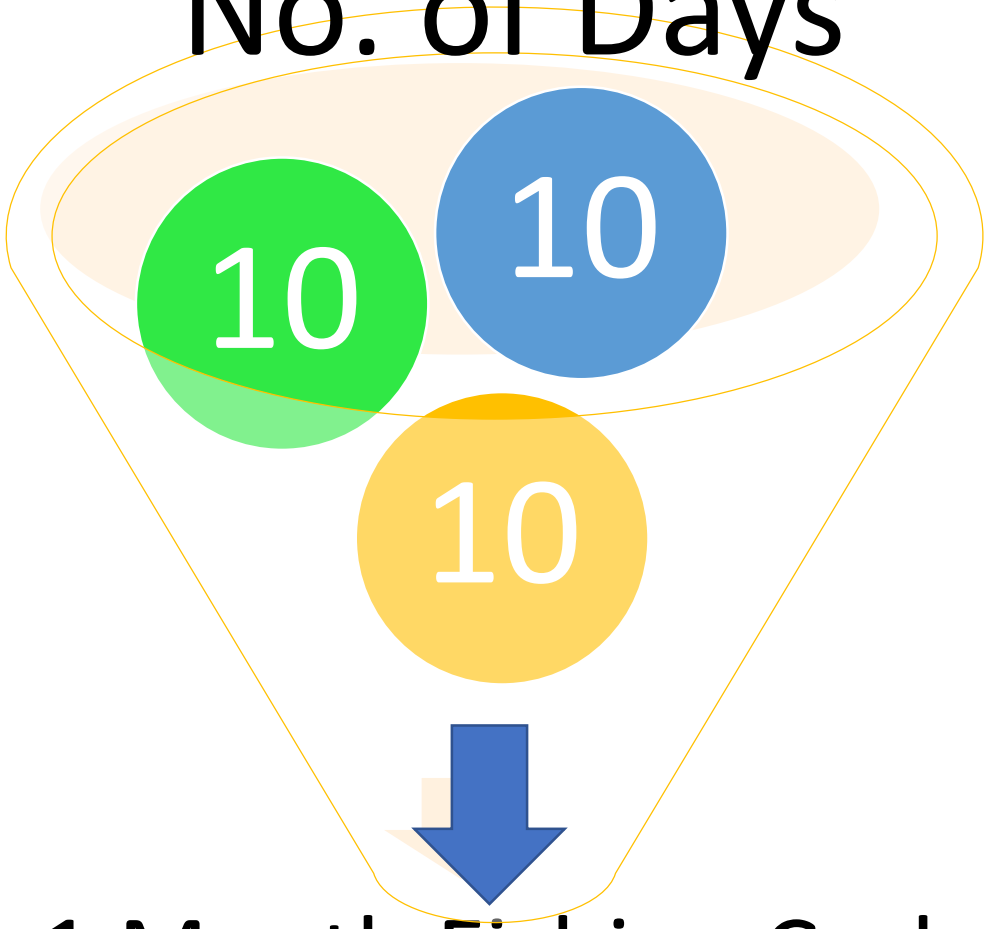
METHODOLOGY (Continued)

Suppose, in a zone, if there are 5 landing centres and 30 fishing days in the month then landing center days would be:

5 x 30= 150 landing center days!

METHODOLOGY (Continued)

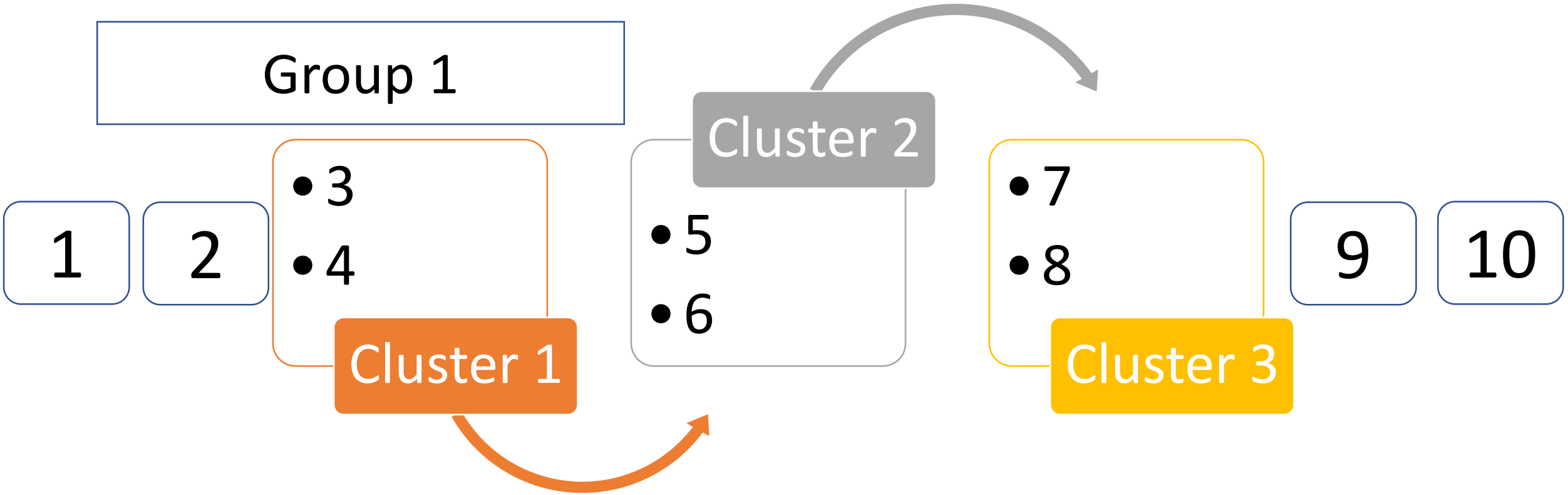
No. of Days



1 Month Fishing Cycle

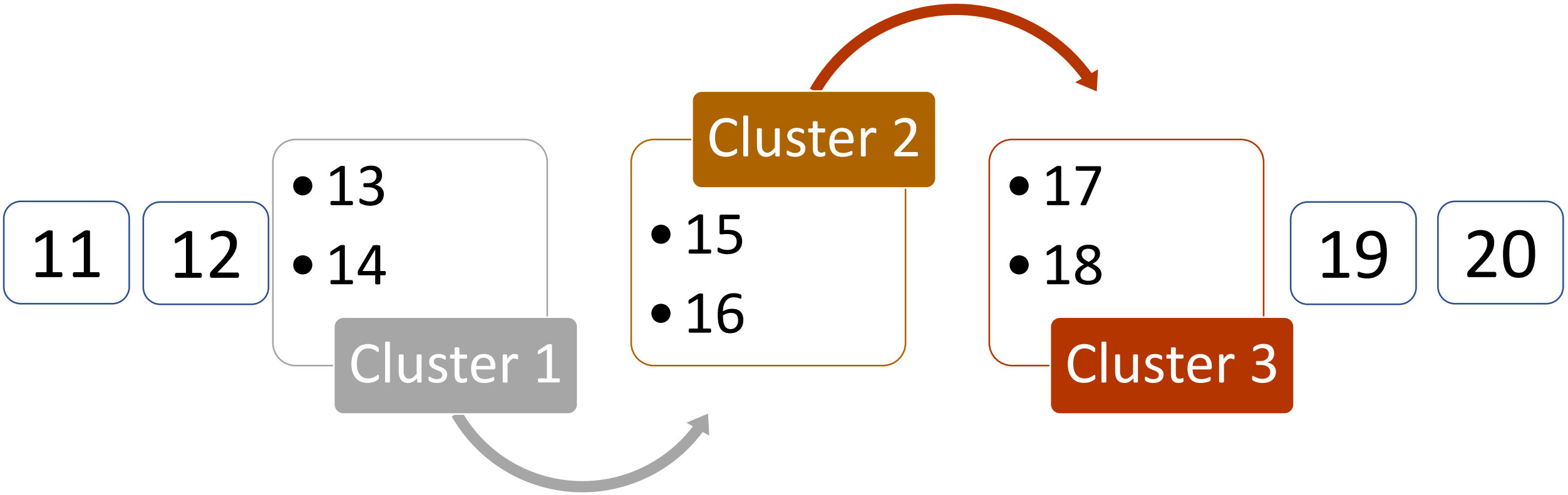
METHODOLOGY (Continued)

To illustrate the selection of landing centres and days, let us consider a fishing zone for a month. Initially, select a date at random from the first five days, let it be 3.



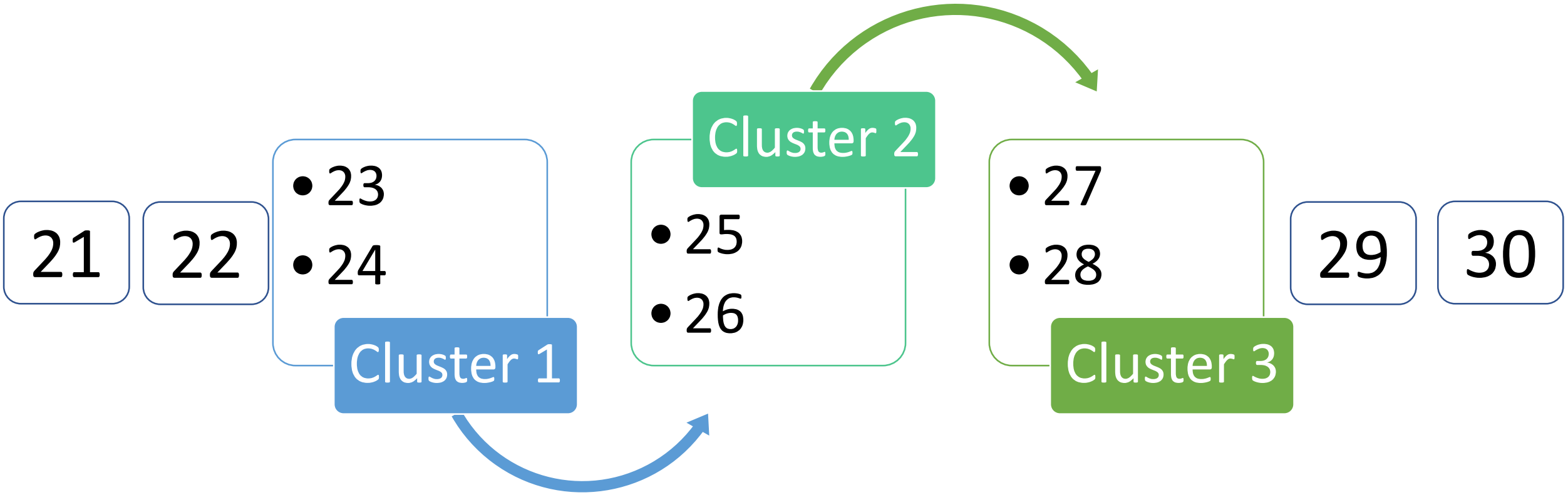
METHODOLOGY (Continued)

Group 2



METHODOLOGY (Continued)

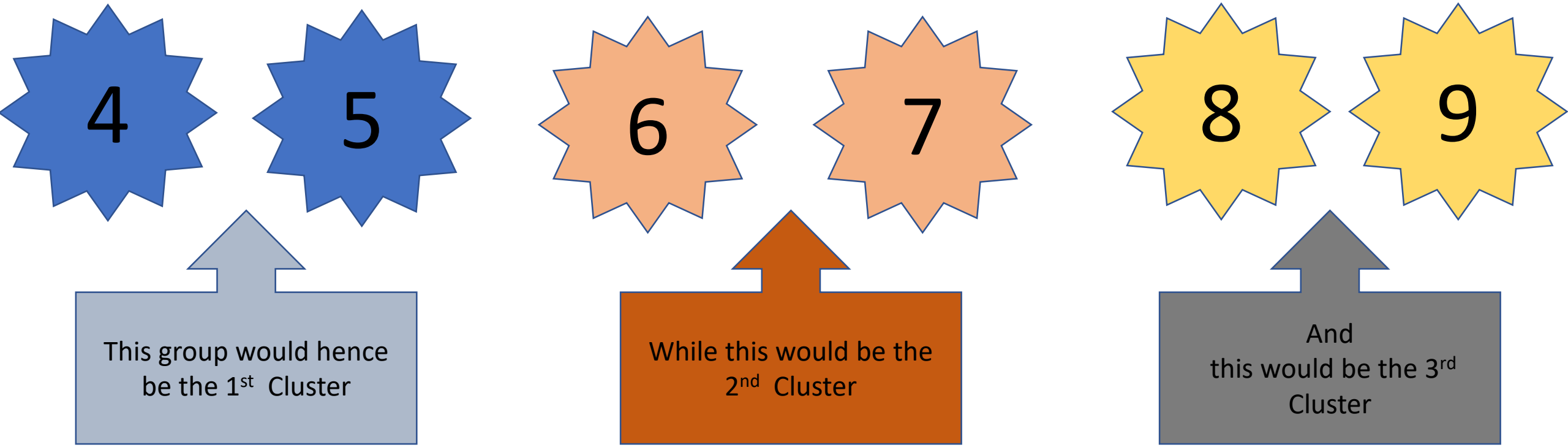
Group 3



We can understanding this cycle better through the following example:

Here we choose the month of March which has 31 days:

We then randomly choose 4th of March as the 1st day of selection of landing and collection. The following days of selection would then be as follows:



Some points to remember while selecting landing centers and days to make a random fishing cycle:

- The day of selection for a fishing day must be randomly selected.
- We make 3 groups of 10 days each to select and make clusters.
- Between each group there must be a gap of 4 days.
- One cluster is made up of 2 days.
- In a group we make 3 clusters.
- The total number of clusters in a fishing cycle must be 9.
- If a fishing cycle i.e. a cluster begins in 1 month it can be carried forward into the following month to complete a whole fishing cycle.

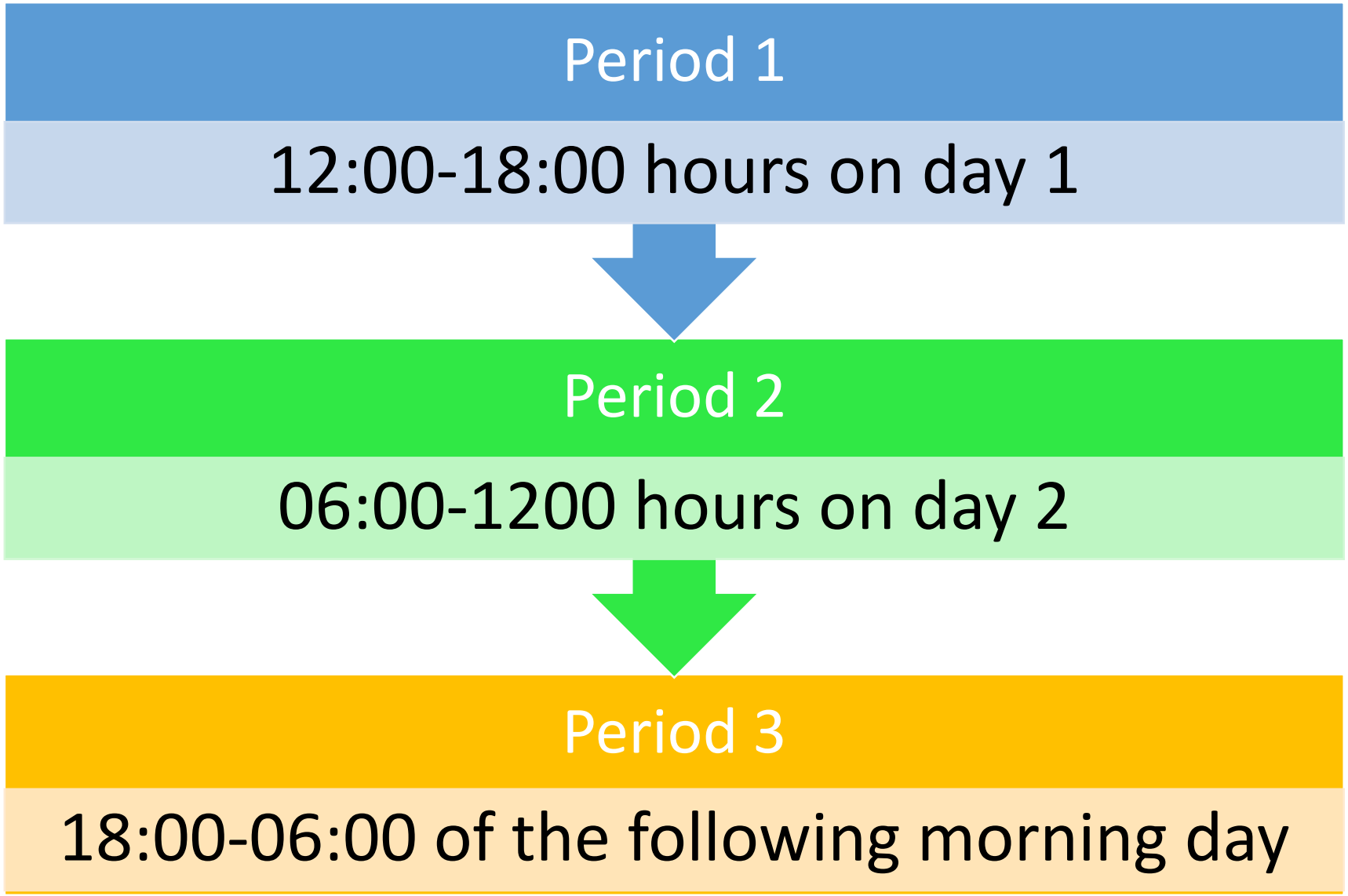
METHODOLOGY (Continued)

- The marine fish landings data collection is done by the technical staff of CMFRI. Usually, one staff is identified to collect data from each zone. Data collection starts from period 1 on each selected landing center day. The staff will be present throughout the periods 1 and 2 at the centers. The data on landings during period 3 (night landings) is usually collected from the landing center by enquiry on the following-day in the morning. The observations on the 3 periods contribute the data for one landing center day (24hrs). So, in a 10-day period, data from 3 center-days are sampled and thus in a month 9 landing center days are sampled.

METHODOLOGY (Continued)

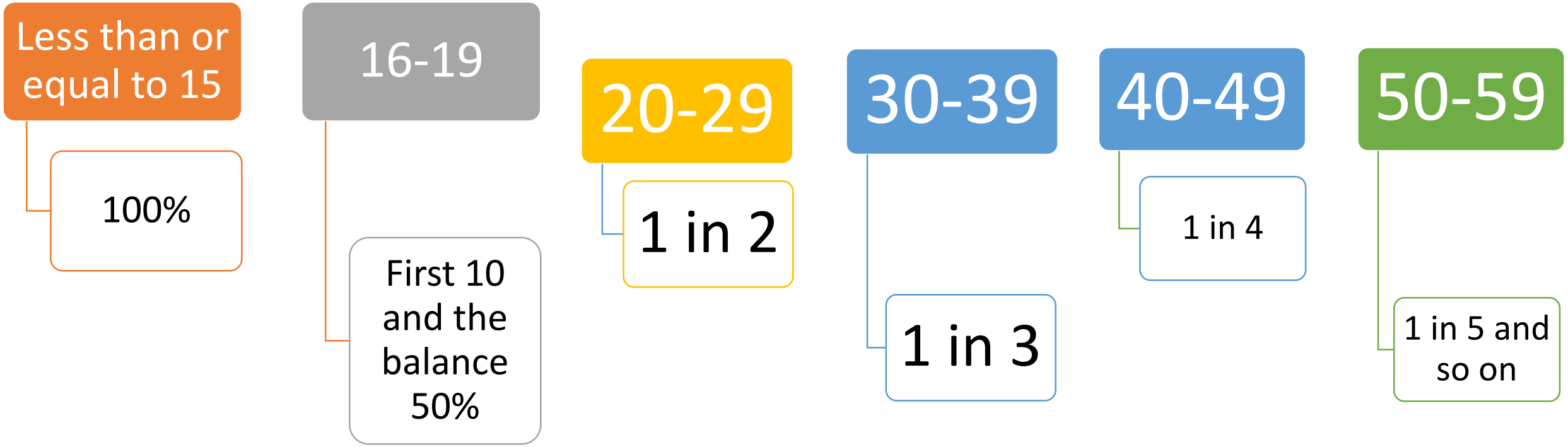
The catches are normally removed in baskets of standard volume from the crafts.

Data Collection Time Period:



Sampling of crafts at the landing centers

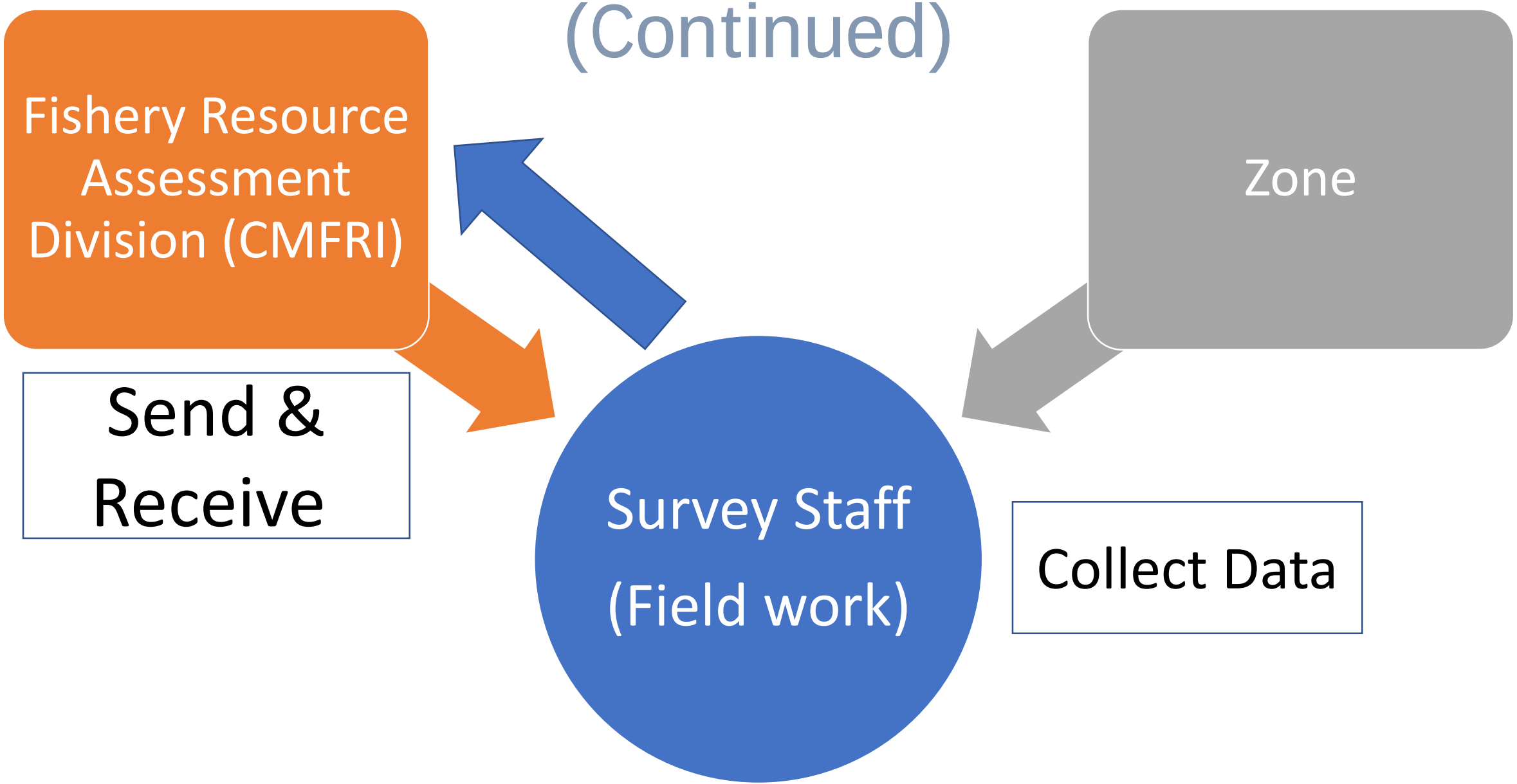
The following selection procedure is followed to sample the number of crafts when the number of crafts is more than 15:



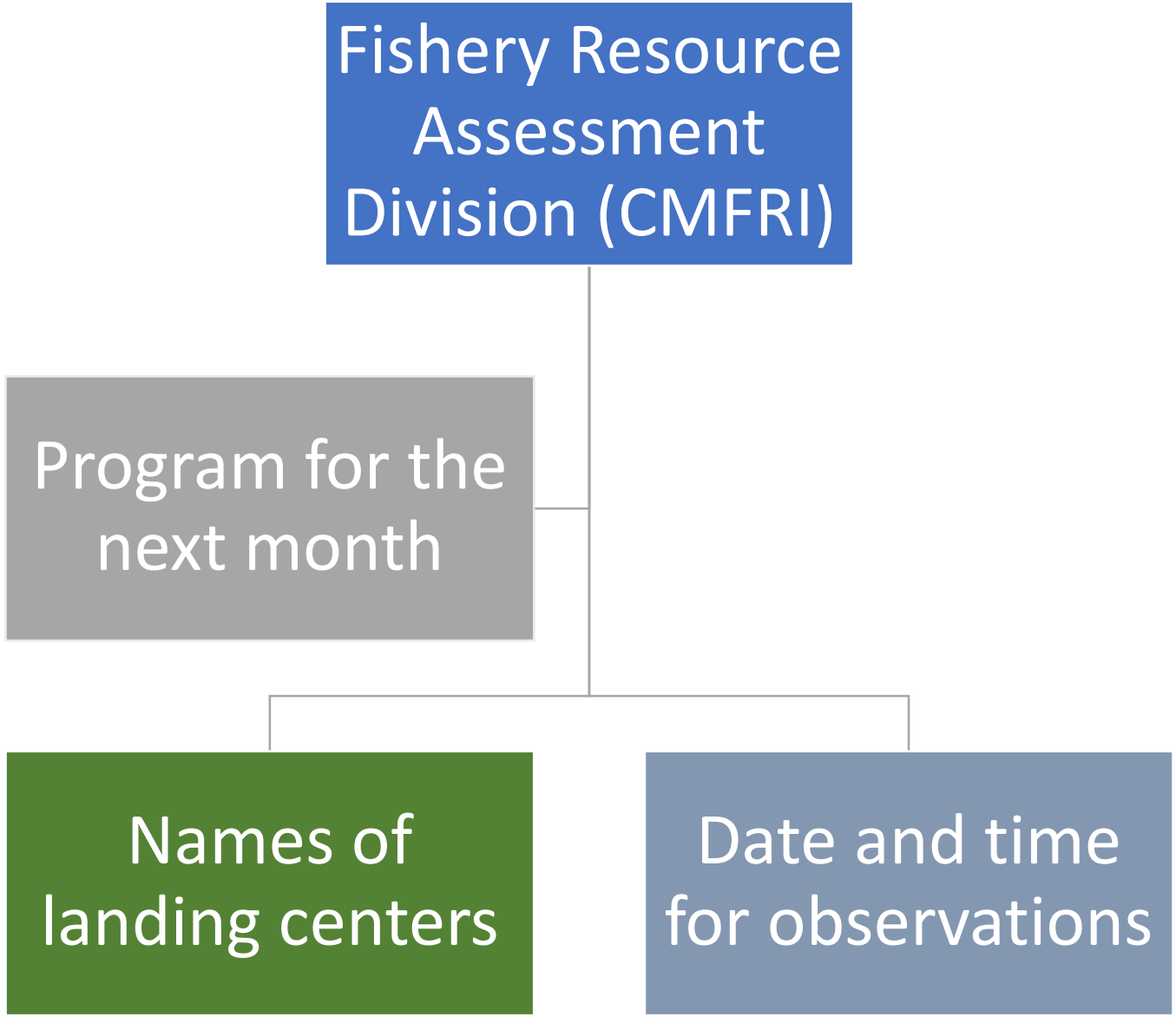
Administration of the Survey

- Each survey center is provided with literature connected with the identification of fish, a reference collection of local fish species, crustaceans and molluscs, field notebooks and registers.

Administration of the Survey (Continued)



Administration of the Survey (Continued)



Administration of the Survey (Continued)

Fishery Resource Assessment Division (CMFRI)	Zone
• Program of fishery work	• Fish Landing Data

Administration of the Survey (Continued)

- Surprise inspections are carried out by the supervisory staff of the Institute and the enumerators are inspected while at work in the field and their field notebooks and diaries are scrutinized.

Administration of the Survey (Continued)

- In the existing sampling methodology, the interest is to estimate gear-wise, species-wise landings for the state in a month, fishing effort according to different types of fishing crafts and, also in terms of man hours.

Citation:

M. Srianth, Somy Kuriakose and K.G. Mini, 2005. Methodology
for estimation of marine fish landings in India. CMFRI Spl. Publ.,
No. 86, 57 pp.