

Rapid access review on the paper “Bio-geographic classification of the Caspian Sea”

Any good level of research in the Caspian Sea is very important due to unique water body, value of fish resources and only a few published international reviews .

In the paper bio-geographic classification of the Caspian Sea was created based on 6 independent variables for the classification algorithm. Among variables were selected the most crucial for the Caspian Sea, i.e., sea surface temperature (SST), bathymetry, sea ice, seasonal variation of sea surface salinity (DSSS), total suspended matter (TSM) and its seasonal variation (DTSM).

Based on obtained algorithm authors identified ten geo-physically-based the distinguished ecoregions (Fig. 3 and Table 2). NCB (NCB Ural Furrow (NCB-UF), NCB Western Shelf (NCB-WS), NCB Transition (NCB-T), NCB Easternmost Shelf (NCB-ES) and NCB River Outflows (NCBRO)),

three in the MCB (MCB Offshore (MCB-OS), MCB Transition (MCB-T) and MCB Coastal (MCB-C)) and two in the SCB (SCB Offshore (SCB-OS) and SCB Coastal (SCB-C))

Ecoregions were selected correct and coincide with real Caspian subdivisions.

It could be more accurate to subdivide also eastern and western Southern basins, they are very different in accordance to annual SST.

But in general approach and analyses of geo-physically-based the distinguished ecoregions were run at a good scientific level.

The biological relevance of these ecoregions was verified using long-term satellite derived Chl *a* concentration and species distribution data. Selection of species composition was presented worse.

Authors used rather old and not reliable source of biological parameters as target species selection.

I give several examples. Phytoplankton is presented only one species *Rhizosolenia fragilissima*. First it is an old Latin name, now it is *Dactyliosolen fragilissimus* (Bergon) Hasle, 1996 (WoRMS). This species was abundant together with another diatom *Prorocentrum cordatum* (= *Exuviaella cordata*) but was replaced by non-native species *Pseudosolenia calcar-avis* and now the most abundant and widely distributed around the Caspian also two phytoplankton non-native species *Pseudo-nitzschia seriata* and *Cerataulina pelagica* (Shiganova et al,2005, Shiganova, 2012).

Zooplankton is represented copepod *Eurytemora grimii* and invasive ctenophore *Mnemiopsis*

leidyi. Why did authors select only *Eurytemora grimaldi*? Certainly it is wide distributed species and had to be selected but why they did not take another widely distributed abundant copepod *Calanipeda aquae – dulcis*. After invasion of *Mnemiopsis leidy* both species replaced by non-native species *Acartia tonsa*, which during summer comprised up to 95% zooplankton (Shiganova et al, 2004; 2010).

Marine fish species *Liza aurata* and *Liza saliens* occur mainly in the southern Caspian.

Clupeonella cultriventris caspia it is now *Clupeonella cultriventris*. Genetic analyses shown that The Black and the Caspian species are the same species (Stolbutova, Slynko, 2005).

Pontastacus eichwaldi occurs now very rare and it is included in Red book.

In benthos it had to be included *Hediste (Nereis) diversicolor* intentionally introduced species which widely distributed around the Caspian now (Karpinsky et al, 2005)

But in general paper is useful and as authors wrote: “the approach developed in this paper is flexible in terms of input variables and spatial and temporal resolution and extent of the study area and observational data records. The method can be employed on updated datasets for improving the ecological classification of the Caspian Sea”

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