

The Newsletter of the Caribbean Regional Fisheries Mechanism - Scientific Issue, August 2013

This newsletter highlights activities conducted by the CRFM Secretariat, Member States and partner organizations during the period June 2012-May 2013.

CRFM EIGHTH SCIENTIFIC MEETING-2012 by Maren Headley, CRFM Secretariat

The Eighth Annual Scientific Meeting took place dur-general meeting was ing 20 – 30 June 2012 in Kingstown, St. Vincent and held to review the the Grenadines. The five CRFM Resource Working outputs of the Groups Groups met. The Conch and Lobster Working and discuss the vari-Group completed a bio-economic assessment of the ous collaborative accommercially important Jamaica gueen conch fish- tivities and projects. ery. The Large Pelagic Working Group conducted The full report of the several activities including: a preliminary assessment meeting is prepared as of the blackfin tuna fishery in the Eastern Caribbean; Volume I. National reviews of the Ecological Risk Assessment for the reports are prepared Effects of Fishing (ERAEF) methodology, the recrea- as Supplement I to tional fishery studies conducted under the Carib- Volume I and the fishbean Large Marine Ecosystem (CLME) project; and ery management advithe FAD deployment and research activities being sory summaries are coordinated by the Moored Aggregating Fish De- prepared as Volume 2. All reports are available at vices in the Lesser Antilles (MAGDELESA) project.

The Reef and Slope Working Group continued analysis of the Montserrat reef fishery and conducted a preliminary analysis of the Jamaica reef fishery. The Small Coastal Pelagic Working Group reviewed the Multiple Criteria Analysis study of the flyingfish fishery in the Eastern Caribbean as well as the activities of the first meeting of the joint CRFM / WECAFC Working Group on Flyingfish in the Eastern Caribbean. The Shrimp and Groundfish Working Group updated the Atlantic seabob assessments for Guyana and Suriname respectively.

The Data Methods and Training Working Group completed training on preparation, review, analysis and presentation of data. The Group also reviewed the 2011–2012 inter-sessional activities, discussed training needs and developed a workplan for 2012 - 2013.

On completion of the Working Group sessions, a



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A BIO-ECONOMIC ANALYSIS OF JAMAICA'S QUEEN CONCH FISHERY by Ricardo Morris- Jamaica Fisheries Division & Maren Headley

change revenue annually and providing employment stock. for many Jamaicans. The fishery is industrial in its Jamaica's conch management regime includes averaging over 500 metric tonnes within the last (TAC), biological assessments, a limited entry poloffshore bank, the Pedro Bank, where the product August I to January 31). is caught by divers using breathing assisting apparatus (mainly Hookah) operated from small dories or canoes associated with mother vessels ranging from 25 to 30 m in length.



Researcher measuring the lip thickness of a queen conch specimen. Source: Robert Glazer

(Convention on International Trade in Endangered tion and the calculated performance of biological Species of Wild Fauna and Flora). CITES provides a and economic variables. legal framework under which the international Among the research recommendations made, survival or its role in the ecosystem is necessary. ling below certain levels.

The Queen Conch fishery is Jamaica's most impor- This permit is dependent on sound scientific astant fishery contributing millions in foreign ex- sessments and knowledge of the status of the

operation and export-oriented with annual exports among other measures; a Total Allowable Catch decade. Fishing is concentrated on Jamaica's largest icy, and a yearly gazetted closed season (usually



Divers conducting underwater visual surveys for queen conch, Source: Ricardo Morris

As the fishery is export driven, it is also important to include the economic factors into the assess-Therefore a bio-economic analysis of ments. queen conch completed during the 2012 meeting. The analysis sought to improve management advice by examining alternative TAC management strategies under various uncertainties such as different growth rates of the queen conch population, and different sizes of the spawning population. The completed analysis now provides managers with the tools to consider alternative management deci-Queen conch is listed in Appendix II of CITES sions, different states of the queen conch popula-

trade of species can be regulated and ensures this were to determine recruitment and settlement patis done in a sustainable manner. In order for Ja- terns for juveniles, effects of climate change, the maica to export queen conch, a permit to show effects of alternative stock rebuilding strategies and that trade would not be detrimental to the species' consequences of the queen conch populations fal-

THE Z-TRAP FISHERY FOR DOCTORFISH IN JAMAICA by Anna Ebanks - Jamaica Fisheries Division & Maren Headley

The pot fishery in Jamaica is one of the main sources of food, employment and income. However, the effects of overfishing, habitat degradation and pollution are impacting this fishery and a marked reduction in catches has been observed. For this analysis, five years of data (2005-2009) were available. The data included date, landing site, weight by species, gear type and effort information. Most of the observed landings were from the south coast, north coast and the offshore bank. In each of these regions, a mixture of fishing gears are used and include china nets, pots (Z-traps) and handlines and hookah (offshore bank). Doctorfish was landed in more fishing trips than any other species and it was decided that the Reef and Slope Working Group would conduct an exploratory analysis on this species. The prevalence of doctorfish in the catches as opposed to the more commercially important larger species such as snappers and groupers was also indicative of a change in species composition on the reefs and is most likely the result of overfishing. It was found that there was an overall decrease in landings over the five year period for doctorfish in both the South and North coast regions. No distinct trend was observed for landings during the five year period in the offshore bank. Different trip frequency patterns were also observed for the three regions. Over the five year period the percentage of trips landing doctorfish was around 40% for the south coast, whereas for the north coast a slight decline occurred from approximately 70% to 45%. On the contrary, the percentage of trips landing doctorfish in the offshore bank increased from 40% to 80%. The group also looked peared to be higher when only positive trips were at how catch rates were affected by including trips analyzed. As the total number of trips that were which did not land doctorfish (zero catches). It was observed by the port samplers was unknown it was found that catch rates were affected by the inclu- not possible to make a conclusion about the catch sion of zero doctorfish catch trips. For the south and effort data. It was also not possible to make any coast, when zero catch trips were included the statements about the status of the doctorfish stock trend was generally the same until 2009 where a given that the data were only for five years and the significant decrease was observed. For the north most recent years were not included. It was therecoast, a decreasing trend was observed in catch fore recommended that a complete time series data rates regardless of the inclusion of zero catch trips. be made available and the analyses be continued. The effect of including zero catch trips was more Specific recommendations on improving data quality varied for the offshore bank and the catch rates ap- and biological data collection were also made.



Mixed fish caught by a pot (above), Source: Anna Ebanks & a Z-trap (pot) used in the reef fishery (below), Source: ECOST 2007.

THE RED HIND & NEEDLEFISH FISHERIES IN MONTSERRAT by Alwyn Ponteen - Montserrat Fisheries Division & Maren Headley

Since the Fifth CRFM Scientific Meeting in 2009, Montserrat has undertaken the task of assessing its fisheries. Each year the Reef and Slope Working Group (RSWG) has focused on guality control of data and conducting analyses. In addition to the various analyses Montserrat has successfully computerised its fisheries catch and effort data for the period of 1995-2011. Fisheries in Montserrat are multi-gear and multi-species. Pots, beach seines and lines (hand, bottom and drift) are the gears most frequently used. The 2012 analyses focused on red hind and needlefish, which were the most abundantly landed fish in the pot fishery and beach seine fishery respectively. Interestingly the number of trips which landed needlefish were half that of those landing red hind. However in terms of weight, four times more needlefish were landed in comparison to red hind. These data were used to describe the landings in weight, effort and catch for these two species. A declining trend in effort along with an increased catch and a stable number of pot fishing trips reporting red hind catches over time was observed. In terms of needlefish a declining trend in effort along with increasing catch rates was also observed. The increased catch rates with reduced fishing effort suggest that the stocks are not in any danger, however in order to be sure full evaluations should be completed.

Improvements in data quality, biological data collection and habitat information were recommended for the inter-sessional period. The Group agreed that it was imperative for Montserrat to continue assessing its fisheries as they provided food, em-





Fishers heading out to sea (above) and a typical day's catch (below), Source: Alwyn Ponteen

ployment and income and were very important given the island's small population, and reduced agricultural activities and fishing areas due to volcanic activities.

A REVIEW OF THE BLACKFIN TUNA FISHERY IN THE EASTERN CARIBBEAN by Derrick Theophile-Dominica Fisheries Division & Maren Headley

and commercially important small tuna species in blackfin tuna is not actively managed by ICCAT. the Western Central Atlantic Fishery Commission In the WECAFC region, the highest quantities of (WECAFC) region. This is an expansive area and blackfin tuna are landed by Venezuela and approxiextends from North America to South America. As mately half of the longline catch in northeast Brazil a tuna species, the management of blackfin tuna is made up of blackfin tuna. For the Eastern Carib-

Blackfin tuna is one of the most frequently caught for the Conservation of Atlantic Tunas. However,

comes under ICCAT, the International Commission bean region, the largest recorded quantities are

landed in Martinique and Guadeloupe while Gre- mended that no significant increase in fishing effort (CPUE) abundance index for the blackfin tuna fish- tuna were caught by FADs. ery to determine how the patterns of catch and effort have changed over time. The dataset from St. Lucia was used as it was the most complete at the time. Year, month and gear (troll and handline) were the factors used to model the CPUE from 1995-2011. Plots of annual landings were also made for Grenada, Dominica and St. Vincent and the Grenadines. No evidence of stock depletion at current harvest levels was found. The plots showed a general increasing trend, however this could have been due to the use of FADs and improved data reporting over time.

FADs increase fishing efficiency as the fish are gathered in one area and are easier to target. FADs also reduce the time spent searching for fish and can therefore increase fishing time. It was recom-

SURINAME SEABOB ASSESSMENT UPDATE by Maren Headley

The CPUE index showed a continuous decline from mendations could be made. 1998 to 2005 after which an increasing trend was observed. The assessment indicated that the stock was not overfished and overfishing was not occurring. The results were consistent with the assessment completed in 2011. It was found that the current harvest rule was precautionary and would not

nada has landed the largest quantity among the be allowed until more information becomes avail-CRFM member countries. Trolling in open water, able on the status of the blackfin tuna stock. Given around FADs (Fish Aggregating Devices), sea the uncertainty on the effects that FADs could have mounts and drifting objects along with handline are on the blackfin tuna population, it was also recomthe main capture methods used in the Eastern Car- mended that more research be conducted on this ibbean region. The purpose of this assessment was aspect of the fishery. This would include monitoring to develop a standardized Catch Per Unit Effort size/length of catches and indicating if the blackfin



A newly deployed FAD in Dominica, Source: Jullan Defoe

The objectives of the 2012 assessment was to up- lead to overfishing as long as the fleet operations date the 2010 stock assessment using the most re- remained constant. The addition of the artisanal cent catch and effort data and test the robustness catches did not change the status of the stock and of the current harvest control rule to the new as- this implied that the harvest control rule was robust sessment. Based on this updated assessment, the enough to account for them. However the assesseffect of including artisanal catches (800 t) was also ment including the artisanal catch was preliminary investigated. Annual catch and effort data were and needs to be expanded. It was recommended to available for the period 1998-2011. Catch per unit continue applying the harvest control rule in order effort was used as an index of abundance of stock. to allow evaluation after which additional recom-

> A seabob management working group has been established along with a research plan in order to fulfil the obligations associated with the Marine Stewardship Council (MSC) ecolabel. The MSC ecolabel was received in 2011 and is a trusted and recognised indicator of seafood sustainability. It allows fishers

to receive higher prices for their product and also vested in a sustainable manner. The seabob was the assures the consumer that the product was har- first tropical shrimp to be certified.

GUYANA SEABOB ASSESSMENT UPDATE by Rabani Gajnabi - Guyana Fisheries Department & Maren Headley

used as an index of stock abundance. Data were seabob CPUE were weak. However, further reernment for 2005-2011 and additional data obtained recruitment in the model were recommended. directly from a processor for 2001-2008.

overfished and overfishing was not occurring. How- control rule based upon available data and the preever the expected catches estimated by the model cautionary principle. Guyana is also seeking to obcurate.

The group also completed a size composition analysis for Suriname and Guyana based on , sex, maturity for females and tail weight. It was found that the sizes caught in Guyana were more variable with a smaller minimum size and a larger maximum size. Overall, there was no clear trend in size, however for both countries the largest sizes occurred in April and May, which is most likely the spawning season. It was found that females were larger than males on average. A significant difference between Guyana and Suriname was observed in that Guyana seabob matured at a smaller size. These results support the theory that these are separate adult populations, but larval distribution could play a role in recruitment between the countries. The group agreed that more information on the ecology of seabob and its life history are necessary to deter-

The main objective of this assessment was to up- mine population and appropriate management units. date the status of the stock, define reference points The group also considered whether rainfall data and develop a harvest control rule for the Guyana could be used as an index of seabob productivity. It seabob fisheries. Catch per unit effort (CPUE) was was found that relationships between rainfall and available from processor data submitted to the gov- search which include factors such as growth and

The group recommended that priority be given to The assessment indicated that the stock was not the development of reference points and a harvest were significantly higher than observed catches tain the MSC ecolabel and the group recognized which indicated that the predictions may not be ac- that verification of the data and improvement in the stock assessment was necessary.



Employees sorting seabob by size at a processing plant, Source: www.crfm.net

DATA, METHODS & TRAINING WORKING GROUP ACTIVITIES by June Masters - CRFM Secretariat

The meeting of the Data Methods and Training John Hoenig who provided instruction on the use of Working Group (DMTWG) was convened during the free statistical and graphical programming 20 - 21 June 2012 in St. Vincent and the Grenadines. language "R" and on the use of the free editor Participants took part in a training session for one RStudio. The topics covered included downloading and a half day. A discussion and year review and installing R, downloading packages of functions, (plenary session) was held in the afternoon of 21 data input, data manipulation, error message, finding June 2013. The training was delivered by Professor information about R, and graphics. Other topics

covered by Professor Hoenig included graphical • techniques for checking data accuracy and graphical approaches to show data trends in a clear manner. The discussion and year review session, examined • the work of the DMTWG over the period July 2011 - June 2012 which included activities such as; the development of CRFM yahoo e-group, а development of a CRFM toolbox and development of a CRFM notebook. The group also reviewed the report "Overview of the Status of Performance of CARIFIS in CRFM Member States, and Options for the Way Forward" and discussed the recommendations that came out of the CARIFIS survey, and the related recommendation given by the Tenth Caribbean Fisheries Forum held in The Bahamas 26 - 28 March 2012.

The group also made the following sugestions and requests for future work and activities :

- More days for training. •
- Requested that the group be provided with training in data cleaning techniques.
- Suggested training in technical writing and data interpretation.

- Suggested that a one week training course to deliver training in; data management, data analysis and data cleaning should be considered.
- The group also agreed that the two week stock assessment course that was provided through the UNU-FTP/ Government of Iceland /CRFM partnership should be repeated.



Data collector in the south of Dominica, Source: **Derrick Theophille**

EXAMINING DATA & INFORMATION NEEDS FOR THE ECOSYSTEM APPROACH TO FISHERIES (EAF) MANAGEMENT by Susan Singh-Renton - CRFM Secretariat

The Ecosystem approach to fisheries, as the name mans are one with nature and the consequences of suggests, is about managing fisheries in harmony any action are ultimately felt by all of nature. with nature. At the heart of this challenge is for us An ecosystem approach to fisheries management humans to appreciate that the sustainability, as well can therefore help us to balance human social and as optimization, of the social and economic benefits economic needs with those of the rest of nature. we enjoy from the operation of any fishery is con- During 2011-2012, CRFM explored the potential of trolled and limited by the laws of nature.

the sea around us can sustain only so many of any activity/impacts, species biology and ecology, and one type of marine organism. Just as only some of environmental conditions to obtain a more holistic the available land is suitable for humans, only some picture of the fishery, i.e. nature's interactions and of the available sea space is suitable for any one ma- their balance. These tools were the Ecological Risk rine species. Just as humans and other land animals Assessment for the Effects of Fishing (ERAEF) and can suffer from the negative impacts of human negli- Multi-criteria Analysis (MCA), and were tested sucgence in the use of the land and its living resources, cessfully on the Eastern Caribbean large pelagic and human negligence of the marine ecosystem has flyingfish fisheries respectively.

two scientific analysis tools that have capacity, in Just as the land can sustain only so many humans, different ways, to combine information on human

negative impacts on marine life. The fact that hu- In identifying the management priorities and building mans share the earth and seas with other living or- an ecosystem management model for the flyingfish ganisms, both plants and animals, means that hu- fishery, the MCA study showed that stakeholders valued above all else, the need to keep the flyingfish ing developed, taking into account the results of the resource in a healthy state, the need for effective ERAEF study.

management strategies that facilitate optimal marketing operations as well, and the role of accurate and accessible information to evaluate management performance against these needs.

The ERAEF study also used stakeholders to help identify the main hazards affecting 39 species of large pelagic fishes and the surrounding ecosystem in the Eastern Caribbean, and by this means, to identify priority fisheries management needs and concerns, by species but within an ecosystem context. The study also provided a first holistic glimpse at the possible effect of fishing and other hazards on the various fish species examined.

This work has been successful in helping scientists, as well as the affected stakeholders in CRFM countries to appreciate how to broaden statistical and scientific monitoring efforts in order to meet the demands of an ecosystem approach.

Most importantly, the priority needs identified by the flyingfish stakeholders have since been incorporated into a regional management plan for Eastern Caribbean flyingfish that is being finalized for adoption and implementation by the harvesting States in 2013, and a regional blackfin tuna management plan is also be-



Researcher and fisher discussing EAF issues (left), Source: Elaine Ferrier

Some of the daily hustle and bustle of a marine ecosystem - a myriad of interactions kept in balance by the rules of nature (below), Source: Sophia Punnett



REVIEW OF RECREATIONAL FISHERIES IN THE CARIBBEAN by Maren Headley

Project assisted the Caribbean countries with the fisheries have received limited management attenimprovement of their shared living marine re- tion in most Caribbean countries due to the absources through an ecosystem level approach.

contributes significantly to employment, income and ment. food security in the Caribbean. Large pelagic fish The development of management strategies to enare exploited by countries from within the region, sure the region-wide sustainability of large pelagic as well as by foreign nations for commercial and fish, fisheries, and user groups in the Caribbean Sea recreational purposes. Recreational fishing can be represents a complex process and requires input conducted by individuals from private or charter from fisheries scientists, resource managers and vessels and includes sport and leisure fishing activi- fishers. ties.

The Caribbean Large Marine Ecosystem (CLME) erel and the dolphinfish. Unfortunately, recreational sences of relevant governance mechanisms and the Large pelagic fish are one such type of resource that limited information to facilitate effective manage-

As part of the CRFM/CLME Large Pelagic Case Many countries in the Caribbean are known for Study an assessment of the nature and importance their sport fishing which is a major component of of recreational fisheries in the Caribbean was commarine-based tourism activities and which targets pleted. In this study a recreational fishery was conmainly billfishes, yellowfin tuna, wahoo, king mack- sidered as any fishing activity conducted for non-

commercial purposes. The initial intention was to Additionally, the role of the recreational fishery in prepare studies for the four Caribbean regions economic growth, poverty alleviation and food se-(East, West, North and South) by choosing two curity was examined for Puerto Rico and the U.S. representative countries. However, given the lim- Virgin Islands. ited expertise and data, studies were only com- The pleted for Venezuela (Southern Caribbean); Antigua are & Barbuda, Barbados, Grenada, St. Lucia and Trini- as a CRFM Redad & Tobago (Eastern Caribbean); and Puerto Rico search and the U.S. Virgin Islands (USVI) (Northern Carib- Collection, bean). Preliminary notes were also made on the Volume 7 and recreational fishery in Colombia.

For each country the following types of information www.crfm.net.. were gathered: the background and evolution of the recreational fishery; the species composition of catches; the number of tagged and released fish; recaptures; fleet size and spatial distribution of fishing effort. Effects on prey species, conflicts between the commercial fishery and use of gears were also reviewed. Economic aspects which were addressed included estimated revenues, costs of fishing and the economic value of the fishery.

studies compiled Paper **CRFM RESEARCH PAPER COLLECTION** Volume 7 available at



REGIONAL REVIEW TO IMPROVE QUEEN CONCH MANAGEMENT by Maren Headley

A queen conch expert workshop was held in Miami • during the period May 22-26, 2012 to develop recommendations for improved management of the • queen conch resource. The recommendations were adopted by the CRFM/OSPESCA/WECAFC/CRFM . Working Group on Queen Conch (QCWG) during 23-25 October 2012 in Panama and linked to a resolution for the Convention on International Trade in Endangered Species (CITES) Conference of • the Parties meeting in 2012. The Declaration of Panama City was a major output of the QCWG and will be endorsed during the 15th WECAFC session • in 2014. Once endorsed, the recommendations will have a direct impact on the operations of queen conch fisheries at the global level. For example, a specific harvest rule and a minimum queen conch density of 100 adults per hectare have been recommended for harvesting countries.

Given these developments and the commercial importance of queen conch, the CRFM Secretariat in collaboration with the ACP Fish II project has undertaken a number of activities to improve the scientific advice and management of the fishery. These include:

- Support for the development of appropriate fishery data collection systems;
- Harmonization of conversion factors in the region to ensure consistent measurement of catch;
- Development of a regional Catch Documentation System (CDS) to combat Illegal Unregulated and Unreported (IUU) fishing and to support management of the legal fishery for conch;
- Development of appropriate scientific techniques to provide sound advice for limited data fisheries and:
- Provision of an independent review system that improves advice and guidance on appropriate harvest strategies.



Source: FAO

UPCOMING EVENTS - August-December 2013

No	F	Date	Location
INO.	Event	Date	
١.	CRFM / WECAFC Working Group on Flyingfish (electronic meeting)	August	
2.	ACP Fish II Queen Conch Visual Survey Training Workshop	6-25 August	St. Vincent & the Grena- dines
3.	ACP Fish II Expert Working Group on MCS	13-16 August	Belize
4.	Inception Workshop of the Caribbean Fisherfolk Action Learning Group	19-22 August	Trinidad & Tobago
5.	Regional Fisheries and Aquaculture Statistics Work- shop	29–31 August	Chile
6.	21st CRFM Executive Committee Meet- ing (electronic)	2-3 September	
7.	Preparation of a legal framework for inland fisheries in Guyana (TCP/GUY/3401)	September	Guyana
8.	INFOPESCA Tilapia Conference	16-18 September	Rio de Janeiro
9.	Annual Meeting of ICCAT Standing Committee on Research and Statistics	23 September - 4 October	Madrid, Spain
10.	UNU-Fisheries Training Programme (6 month course)	September 2013 - March 2014	Iceland
11.	Caribbean Week of Agriculture	4-12 October	Guyana
12.	CRFM/CNFO/CTA Workshop on Regional Fisher- ies Policies	7-8 October	Guyana
13.	4th Special meeting of the CRFM Ministerial Council	10 October	Guyana
14.	3rd Sub-Committee Ministerial Council on Flyingfish	10 October	Guyana
15.	ACP Fish II Validation Workshop on Draft Updated Prosecution Manual	16-18 October	Grenada
16.	ACP Fish II final Programme Monitoring Workshop	21 - 23 October	The Bahamas
17.	6th ACP Fish II Steering Committee Meeting	24 - 25 October	The Bahamas
18.	ACP Roundtable Meeting, Reception & Closing	25 October	The Bahamas
19.	CFMC/WECAFC/OSPESCA/CRFM Working Group on Spawning Aggregations	29 - 31 October	Miami
20.	WECAFC-FIRMS Workshop on Resources and Fisheries Inventories	01-02 November	Corpus Christi, USA
21.	WECAFC 6th Scientific Advisory Group (SAG) Meeting	03 November	Corpus Christi, USA
22.	COPESCAAL Session	November	Argentina
23.	66th GCFI Conference	4 - 8 November	Corpus Christi, USA
24.	Twenty third Regular Meeting of ICCAT	18-25 November	Cape Town, South Africa
25.	CRFM/JICA CARIFICO Project Workshop	2-6 December	St. Vincent & the Grena- dines
26.	CRFM Executive Committee Meeting	7 December	St. Vincent & the Grena- dines

Check out our NEW website at: www.crfm.net OR www.crfm.int

CRFM is pleased to announce its upgraded website! The website is a part of a suite of communication and technology tools being developed with funding from the ACP Fish II Programme. The website is user friendly, features regular updates on projects and meetings, provides access to CRFM publications, and allows members to interact and exchange information.

CRFM is on Social Media too! For instant updates on fisheries matters you can: Follow us on Twitter; The CRFM@CaribFisheries

Join our Facebook page; facebook.com/CarFisheries

 View us on YouTube; The CRFM

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CRFM Member States and Secretariat staff learning about new website and other electronic knowledge exchange tools. Source: Vladimir Abramytchev.

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