Paper for Consideration by NCWG (CSPCWP) and NIPWG (SNPWG) workgroups

Study of Possible Green Colours Available for MPA Purposes

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Executive Summary:	This paper is a study paper
Related Documents:	CSPCWG11-08.12A Portrayal of MPA
Related Projects:	NIPWG (SNPWG) Development of S-122 Product Specification for Marine Protected Areas

Introduction / Background (by Colby Harmon)

1. Based on SNPWG paper CSPCWG11-08.12A and previous requests to DIPWG for assistance, Colby Harmon, former DIPWG chair, requested assistance from Mr. Hannu Peiponen of Furuno Finland, who has provided colour pallet support to DIPWG and TSMAD in the past. Mr. Peiponen has provided this paper to help define colour coordinates for Marine Protected Areas.

2. In the past Furuno Finland has for example proposed alternative colours for use by mariner symbols and these proposed colours have been agreed by DIPWG.

3. We have been requested to propose CIE values in the three (day, dusk, night) pallets for a separate green outline and a fill colour (A total of six shades.) A SNPWG paper has requested a shade, "which is distinct from inter-tidal green" and that the fill, "should be faint; just sufficient to notice."

4. Further we have been informed that the colours will undoubtedly undergo further testing by SNPWG and also in the S-100 testbed, so that IHO is not necessarily looking for a final perfect solution at this time, just something to get testing started.

Analysis/Discussion

5. Request for colours is green which is distinguishable from inter-tidal (colour token DEPIT). This study has included also all other already defined green or greenish colours (colour tokens CHGRN, LITGN, ARPAT, RADHI, RADLO and MARCY plus a check with colour associated with water depth (colour tokens DEPSC, DEPDW, DEPMD, DEPMS, DEPVS)

6. Request for colours was for all palettes. For the time being this study has been limited to DAY palette only. Finding good colours is human resource consuming and we have decided not study DUSK or NIGHT before the related IHO workgroup has sorted out their mind how to use the colour for DAY.

7. In general finding new colour tokens which are distinguishable is a great challenge as the S-52 has already so many assigned colours. This study has tried to find two new basic colour coordinates: one for outline and another for colour fill. Then the colour for fill has been expanded to be a series of 6 shades of the same basic fill colour.

8. Our technical implementation recommendation for the request “should be faint, just sufficient to notice” is to use transparency as available in the S-52 presentation library model. For example use of 75% transparency for fill area will make the MPA fill colour very faint over the charted area.

9. The maker of this study has no other knowledge that the generic request to find distinguishable colours. This is making difficult to have any final judgment especially for series of shades. The related IHO workgroup should make up their mind about use cases and symbols shapes. If the use cases are known then there could be possibilities to further continue this kind of study.

10. The table in the annex has colours both as CIE and RGB. The normative one will be the CIE colour. The RGB values are given for a specific LCD monitor model named in the annex. Although the hue of the colour would probably be different with another monitor, the maker of this study is of the opinion that the RGB values are usable for evaluation purposes, if the facility to get calibrated RGB values from the CIE colours is not available in the evaluation platform.

Conclusions

10. This is a possible start for evaluation suitable symbology for MPA purposes.

Recommendations

11. This proposal is offered without any obligation to use any information from this proposal.

Justification and Impacts

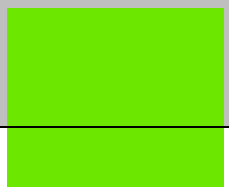
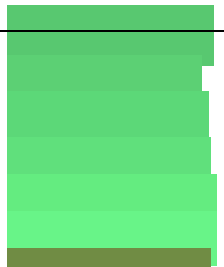
12. Obviously this paper offers a possibility to start evaluation.

Action required of related IHO workgroup

The related IHO workgroup is invited to:

a) Discuss the issue presented in this paper.

Annex – Current shades of green assigned in S-52 for DAY and new proposals for MPA

Token	Example	CIE [x,y,L]	Resulting RGB for a Furuno MU231 monitor [red, green, blue]	Notes
CHGRN LITGN		0.31, 0.56, 60.0	108,232,0	Used as fill colour for AtoNs and as sector colour for lights Surrounded always by at least 1 pixel rim to protect from mixing with other object using same or close colour
DEPIT		0.26, 0.36, 35.0	112,172,140	Inter-tidal area
ARPAT		0.26, 0.42, 30.0	76, 172, 108	Radar tracked targets and AIS targets
RADLO . . . RADHI		0.31, 0.56, 20.0 . . . 0.31, 0.56, 60.0	36, 88, 0 44, 104, 0 48, 108, 0 52, 116, 0 56, 124, 0 60, 132, 0 64, 140, 0 68, 144, 0 72, 156, 0 76, 164, 0 80, 172, 0 84, 180, 0 92, 192, 0 96, 208, 0 108, 232, 0	Radar echo from weakest echo to strongest echo. CIE c,y stays while L is changing. NOTE: Any mixing with CHGRN/LITGN is avoided as symbols using CHGRN/LITGN always include at least 1 pixel rim with other colour
MARCY		0.20, 0.355, 20.0	0, 114, 116	Alternative colour for mariner symbol use, for example alternative to ARPAT
		0.27, 0.45, 9.0	44, 108, 56	**Proposal** Borderline of MPA
		0.27, 0.45, 45.0 0.27, 0.45, 50.0 0.27, 0.45, 55.0 0.27, 0.45, 60.0 0.27, 0.45, 65.0 0.27, 0.45, 70.0	88, 200, 112 91, 208, 116 94, 216, 120 97, 224, 124 100, 236, 128 104, 244, 136	**Proposal, alternative 1** Fill colour of MPA NOTE: Cannot make brighter (too close to max). Cannot make darker (will became indistinguishable from already defined colors)
		0.33, 0.45, 20.0 0.33, 0.45, 30.0 0.33, 0.45, 40.0 0.33, 0.45, 50.0 0.33, 0.45, 60.0 0.33, 0.45, 70.0	112, 140, 68 132, 164, 80 144, 184, 92 160, 200, 104 172, 216, 112 180, 232, 116	**Proposal, alternative 2** Fill colour of MPA